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A REVIEW OF THE 1983 COMMERCIAL SALMON NET FISHERIES IN NORTHERN B.C. (AREAS 3, 4 AND 5): CATCH, ESCAPEMENT AND MANAGEMENT STRATEGIES

by

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ABSTRACT

Kadowaki, R., L. Jantz and P.E. Sprout. 1984.
A review of the 1983 commercial salmon net fisheries in Northern B.C. (Areas 3, 4 and 5): catch, escapement and management strategies. Can. MS Rep. Fish. Aquat. Sci. 1765 : 47 p.

The commercial net fishery on salmon runs returning to the Nass and Skeena rivers (Statistical Areas 3, 4 and 5) in 1983 was characterized by record high pink catches in Area 3 and above average pink catches in Area 4. Sockeye returns to both areas were less than average. Pink escapement was above optimum for pink salmon in both the Nass and Skeena rivers while sockeye escapement was below optimum in the Nass River and near optimum in the Skeena River. The strong pink and poor sockeye returns resulted in extended fisheries in Area 3 from mid-July to mid-August and limited fisheries in Area 4 during July.

This report reviews management actions and documents how management decisions for commercial fisheries in Areas 3, 4 and 5 were made, what information was used, how it was interpreted and what the results were in terms of catch and escapement.

Key words: Northern B.C., 1983 commercial salmon net fisheries, management strategies

RÉSUMÉ

Kadowaki, E., L. Jantz and P.E. Sprout. 1984.
A review of the 1983 commercial salmon net fisheries in Northern B.C. (Areas 3, 4 and 5): catch, escapement and management strategies. Can. MS Rep. Fish. Aquat. Sci. 1765: 47 p.

Des prises de saumon rose, à des niveaux records dans la zone 3 et au-dessus de la moyenne dans la zone 4, ont caractérise la pêche commerciale au filet du saumon remontant les rivières Nass et Skeena (zones statistiques 3, 4 et 5). Les remontées de saumon rouge ont été inférieures à la moyenne dans ces deux zones. Dans les rivières Nass et Skeena, les échappées de saumon rose ont dépassé l'optimum tandis que les échappées de saumon rouge ont été inférieures à l'optimum dans la Nass et près de l'optimum dans la Skeena. Les remontées importantes de saumon rose et les faibles de saumon rouge ont entraîné une prolongation de la pêche dans la zone 3, de la mi-juillet à la mi-août, et une pèche restreinte dans la zone 4, en juillet.

Le présent rapport porte sur les mesures gestionnelles et explique comment les décisions ont été prises pour ce qui est de la pêche commerciale dans les zones 3, 4 et 5, quelles données ont été utilisées, comment elles ont été interpretées et quels résultats ont été obtenus en termes de prises et de remontées.

Mots-clés: Colombie-Britannique septentrionale, pêches commerciales du saumon au filet en 1983, strategies gestionnelles

INTRODUCTION

Fisheries management strategies as a rule are not well documented. A record of salmon management activities for the Nass and Skeena rivers commercial fisheries has been lacking since 1970 (Dept. Env. 1969; Todd and Dickson 1970). Since that time, weekly bulletins have reported the in-season information such as catch and escapement; however, no other documentation or formal post-season review has occurred.

Recent studies stressed the importance of management decision records and noted that their absence makes it difficult to appraise and evaluate the management results (Pearse 1982). Others have argued that learning from fisheries management actions is impeded without a record of strategies and may increase the risk that past incorrect management actions will be repeated (Anon. 1982). As well, the lack of a written record limits transfer of knowledge among staff and makes it difficult for managers to benefit from past experience in a systematic manner.

The purpose of this report is to review strategies used to manage the commercial salmon net fisheries on salmon returning to the Nass and Skeena rivers (Statistical Areas 3, 4 and 5; Fig. 1) in 1983. It documents how management decisions were made, what information was used to base the decisions on, how the information was interpreted, and what the results were in terms of catch and escapement. Information on the Indian Food Fishery and sport fishery is also presented.

MANAGEMENT PROCEDURES

This section provides a general view of the procedures followed by the North Coast Operations Branch of the Department of Fisheries and Oceans (DFO) in preparing pre-season fishing plans and undertaking in-season management.

Pre-season stock expectations and fishing plans are developed by the local fishery officer and area biologist, and are reviewed with senior managers. Following comments by an industry advisory board (in Areas 3, 4 and 5 this is the Skeena River Management Committee) which is comprised of local fishermen, processors, sports fishermen and DFO staff, the proposed fishing plans are finalized and published in the Pacific Region Commercial Fishing Guide (Append. 1-3).

During the season, fishery officers and biologists meet to evaluate each fishery. Catch, vessel distribution and their type and number are reviewed daily. These data, together with other information such as test fishery catches, charter boat catches and escapement estimates, if available, provide a picture of run size and timing. Based on this information, fishing plans are proposed and reviewed with the area manager and director prior to implementing.

DATA SOURCES

As discussed above, there are a number of data sources used to assess the in-season salmon runs. For the Nass and Skeena fisheries these are discussed in greater detail below.

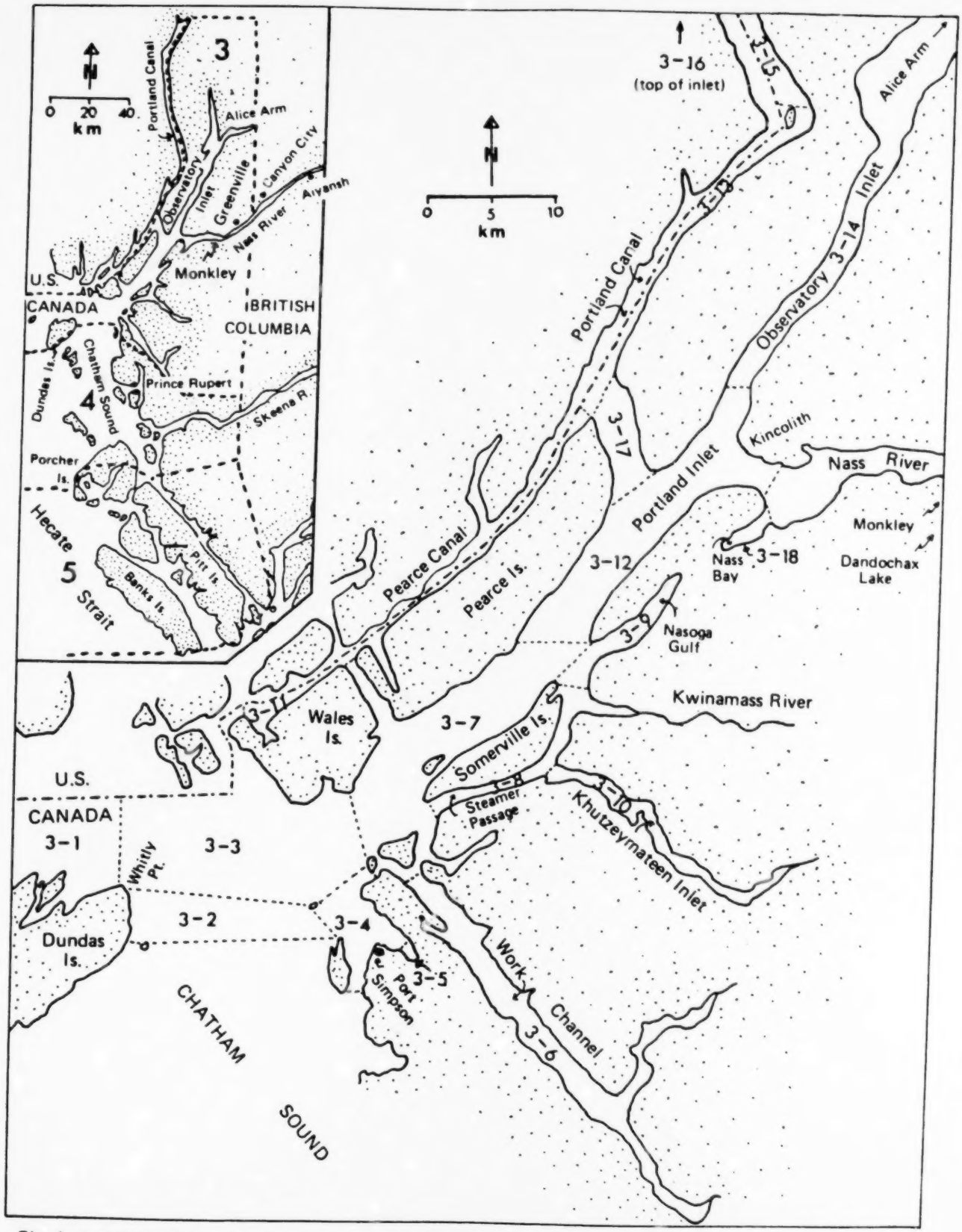

Fig. 1. Location of Area 3 management units, B.C. (insert shows location of Areas 3, 4, and 5.)

1. Commercial catches

Information on commercial catches is obtained by Fishery Officers during commercial openings. Catches are "hailed" or passed to Fishery Officer by fishermen who for the most part usually estimate their catches. In many cases, particularly with gillnets, catches may be delivered to other vessels (packers) on the grounds and the Officers may collect catch information from the packers. In these instances the fish are weighed and usually counted.

Although methods will vary, fishery officers obtain catches from a proportion of the fleet and then expand this, based on aerial or patrol vessel gear counts, to arrive at a total catch for all gear. Usually this requires that the fishing area be subdivided into several smaller areas determined by factors such as species catch mix and gear type. Each area would be sampled separately and the results expanded accordingly to arrive at a total catch. In longer fisheries (more than one day) the fishery officer may sample a large proportion of the fleet and in many instances will obtain catch estimates from virtually all of the fleet.

In addition to considering catch information from commercial fisheries in Areas 3, 4 and 5, catches from Alaskan fisheries at Cape Fox and Noyes Island are also reviewed. Fisheries in these locations intercept salmon, particularly sockeye, bound for the Nass and Skeena rivers. The catches provide an additional information source on stock abundance and timing.

2. Indian Food Fisheries

Indian Food Fisheries are conducted on both the Skeena and Nass rivers throughout the salmon season. Fishing by gillnets on both of the lower rivers and estuaries provides useful information on stock strength. This is particularly important early in the season prior to any commercial fisheries.

3. Test fisheries

On both the Nass and Skeena rivers, gillnet test fisheries provide a daily estimate of pink (Skeena only) and sockeye escapement. A commercial gillnetter is chartered to test-fish on both rivers above the upriver commercial fishing boundary. On the Nass River, the daily index of abundance is expressed as a catch per 1000 fathom minutes of fishing time which standardizes catches for daily variability in time fished and length of net used. The escapement per index is calculated using an average historical relationship. In the Skeena test fishery, a regression of weekly escapements (from escapement counts at a fence on the Babine River, a major tributary of the Skeena) with weekly sums of daily test-fish catches per hour has been calculated. New data points are added and a new regression equation is calculated annually. Indices of abundance for non-target species are also recorded for comparison with previous years.

4. Charter vessels

In 1982 and 1983, an International Salmon Tagging Program was carried out by DFO, and the U.S. National Marine Fisheries Service and the Alaskan Department of Fish and Game. The purpose of this program was to determine the exploitation pattern of sockeye and pink (tagged in 1982 only) in northern

B.C. and southeastern Alaska. Seine and gillnet vessels were chartered to tag sockeye in 1983 in various locations in Areas 3, 4 and 5 and southern S.E. Alaska. Information on catches from this program provided additional data with which to assess stocks.

5. Escapement

Another source of information used to manage commercial fisheries is escapement. At the start of the fishing season, the salmon run has not yet entered sanctuary areas (holding areas usually adjacent to spawning streams but not open to commercial fishing) or spawning streams and thus no escapement information is available. However, as the season progresses and fish are observed in sanctuaries and streams, this information becomes very important. Escapement to date is compared with previous years' escapements in order to evaluate timing and size of run and thereby assess fishing plans.

This report deals with all five species of Pacific salmon: sockeye (Oncorhynchus nerka), coho (O. kisutch), pink (O gorbuscha), chum (O. keta) and chinook (O. tshawytscha); and one species of anadromous trout, steelhead (Salmo gairdneri). All 1983 data are preliminary and may change slightly. All fishing period dates refer to a time of 1800 hours on that date. Hence, weekly periods that seem to overlap actually do not.

AREA 3

1983 PRE-SEASON STOCK EXPECTATIONS

The 1983 stock expectations and fishing plans for Area 3 are described in detail in Appendix 1 and are reviewed briefly below.

Sockeye

Sockeye returns to the Nass River are comprised largely of age 4 and 5 fish that have spent either 1 or 2 years in freshwater. Six year old fish make up the bulk of the remaining stock. An above average escapement for the 1979 brood year (212,900), combined with a less than optimum escapement for the major 1978 brood year (144,600) and a well above average escapement for the 1977 brood year (400,400) resulted in a near average return being forecast. The 10-year average total return of Nass sockeye is approximately 440,000.

Pink

Optimum escapement in 1981 and reported large fry abundances the following spring resulted in an above average pink run being forecast.

Chum

Poor returns to date for the flood impacted 1978 brood and a poor escapement in the major brood year, 1979, signalled a poor return for 1983.

Chinook and coho

Extremely low brood year spawning escapements led to poor chinook expectations. For coho, a slightly below average escapement but good winter conditions during the freshwater juvenile stage resulted in a near average return being forecast.

1983 PRE-SEASON FISHING PATTERN, AREA 3

The Nass River sockeye net fishery was expected to open on June 26, one to two weeks later than normal, and the seine fishery to commence on July 3 due to concerns for adult chinook returns. In-season stock abundance, as determined by the Nass River test fishery and catch estimates, would determine the actual fishing pattern until at least the middle of July. Beginning in mid-to-late July pink salmon abundance would become the primary management indicator for determining fishing times. Concern for chum stocks would permit only minimal fishing opportunities in Observatory Inlet (Fig. 1) while the extent of the Portland Canal fishery would be determined by stock considerations and any cooperative conservation efforts between Canada and the U.S. regarding chum salmon. Concerning the management of the outer portions of Area 3 (3-1 to 3-4; Fig. 1) the strategy would be to provide for the conservation of stocks while preventing the escalation of interception rates past recent levels.

Trolling was scheduled to begin on April 15 for seven days a week in the entire Area 3. Beginning on May 1 only the area outside of Whitly Point on Dundas Island (Fig. 1) would remain open continuously while the remainder of Area 3 would only be open to trolling during net fishing times in the same area. This measure was intended for the protection of local Nass chinook stocks.

1983 WEEKLY FISHING SUMMARY, AREA 3

Table 1 summarizes weekly in-season fishery management and its rationale. Tables 2 and 3 present weekly gillnet and seine catches respectively in Area 3 by species and weekly number of gear. Figure 1 shows Area 3 management units (M.U.).

June 26 to July 3

Area 3 remained closed due to low stock levels. Sockeye escapement to the Nass River was estimated at 39,000 by the gillnet test fishery at Monkley (Fig. 1) on June 22; this was approximately one-half of the previous 15-year average and brood year escapement to date. In addition, the Cape Fox Alaskan gillnet fishery which opened on June 19 and the Indian Food Fishery on the lower Nass both reported very poor early catches.

July 3 to July 10

Sockeye escapement continued to be low. On June 29 escapement was estimated at 62,000; with normal timing this represented 50% of the total escapement. This, along with continued poor catches in the Cape Fox and Indian Food Fisheries, as well as low sockeye catches by the vessels chartered for the International Tagging Program resulted in the further postponement of the Area 3 net fishery.

July 10 to July 17

Sockeye escapement showed some improvement by July 6, increasing from a projected level of 120,000 to 150,000. This level was still well below the optimum escapement of 220,000 and, given average run timing, the peak escapement was over. Abundances of all other salmon species appeared to be good based on the catch by tagging vessels in Area 3. Chinook escapements

Table 1. Weekly net fishing season: pre-season plans, in-season management and rationale for management, Area 3, 1983.

Date	Pre-season fishing plans[a]	In-season management[a]	Rationale for in-season management
June 26-July 3	Open to gillnets 2 days.	No opening.	-low Nass River sockeye escapement indicated by test fishery, low catches by Alaskan gillnet fishery at Cape Fox, and low catches by Indian Food Fishery on Nass River -need to conserve Nass River sockeye stocks
July 3-10	Open to nets 2 days.	No opening.	-continued low Nass River sockeye escapement indicated by test fishery, low catches in the Cape Fox fishery, Indian Food Fishery on Nass River, and International Tagging Program
July 10-17	Open to nets 2 days.	Opened to nets 1 day.	-sockeye escapement somewhat improved -abundance of other species good, based on catches by tagging vessels -good Nass River chinook escapement indicated by test fishery -fishery is coincident with opening in Area 4 -fishery closed after 1 day due primarily to low sockeye catches and concern over Nass River escapement
July 17-24	Open to nets 2 days.	Opened to nets 1 day; extended 3 days.	-very good pink catches the previous week -fishery coincident with Area 4 and 5 openings -fishery extended due to record pink catches -fishery closed due to concern over Nass and Skeena sockeye stocks, and heavy gear concentration in Area 3
July 24-31	Open to nets 2 days.	Opened to nets 2 days; extended 1 day.	-record pink catches the previous week -good early pink and chum escapements in Area 3 -fishery extended in most of Area 3 due to high pink and sockeye catches at start of fishery -fishery closed since pink catches declined

Table 1. (Cont'd).

Date	Pre-season fishing plans[a]	In-season management[a]	Rationale for in-season management
July 31-Aug. 7	Open to nets 2 days.	Opened to nets 2 days; extended 2 days.	-excellent pink catches and escapements to-date indicated by test fishery and stream surveys -fishery extended due to good pink catches -fishery closed due to concern for local chum and coho stocks, and declining pink catches
Aug. 7-14	Open to nets 2 days.	Opened to nets 2 days; extended 2 days.	-fishery extended due to high pink catches -sockeye escapement to Skeena River nearly completed; no further conservation measures required
Aug. 14-21	Open to nets 2 days.	Opened to nets 2 days; extended 2 days.	-pink escapement targets met or exceeded -chum escapements to-date satisfactory -fishery extended due to good pink catches -fishery closed due to concern for coastal chum, coho and late-run pink stocks
Aug. 21-28	Open to nets 2 days.	Opened to nets 2 days.	-fishery closed due to low local stocks of chum, coho and pink salmon -seasonal fishery terminated August 23 since no further fishable stocks were anticipated

[a]For restrictions on management units see text and Appendix 1.

Table 2. Gillnet catch by species and number of gear, Area 3, 1983 (preliminary data)[a].

Date	No. gear	Sockeye	Coho	Pink	Chum	Chinook	Sthd.[b]	J.chin[c]
July 10/11	190	5,915	945	12,565	6,740	80	20	35
Week total	-	5,915	945	12,565	6,740	80	20	35
July 17/18	101	6,210	3,225	13,625	3,280	110	40	60
19	65	2,745	1,905	9,055	1,110	45	10	20
20	220	15,200	2,445	24,540	2,680	195	245	60
21	165	5,230	605	11,335	2,170	70	120	25
Week total	-	29,385	8,180	58,555	9,240	420	415	165
July 24/25	92	9,630	945	28,400	3,440	60	60	5
26	250	7,300	1,300	30,950	2,075	140	215	50
27	120	1,130	665	13,615	745	40	100	10
Week total	-	18,060	2,910	72,965	6,260	240	375	65
July 31/Aug. 1	38	3,005	470	9,305	550	26	51	5
Aug. 2	77	3,135	915	13,050	1,170	60	100	5
3	82	1,955	1,060	14,645	945	35	45	10
4	57	1,005	885	12,195	625	30	30	5
Week total	-	9,100	3,330	49,195	3,290	151	226	25
Aug. 7/8	48	5,110	780	9,785	415	15	125	10
9	65	3,685	970	12,515	1,470	25	155	10
10	89	2,555	945	13,510	1,125	25	85	5
11	36	524	302	4,947	1,515	23	15	0
Week total	-	11,874	2,997	40,757	4,525	88	380	25
Aug 14/15	131	1,102	985	7,510	3,600	14	83	7
16	132	1,070	1,280	7,650	6,730	45	120	5
17	118	568	680	4,120	4,283	31	70	0
18	85	204	590	1,790	2,970	16	3	0
Week total	-	2,944	3,535	21,070	17,583	106	276	12
Aug. 21/22	144	292	1,535	1,950	5,325	58	30	10
23	72	137	1,020	917	2,138	34	17	1
Week total	-	429	2,555	2,867	7,463	92	47	11
Total for year	-	77,707	24,452	257,974	55,101	1,177	1,739	338

[a]Hailed catches subject to change when sales slip catches are processed.

[b]Steelhead.

[c]"Jack" chinook; chinook less than 2.3 kg (5 lb).

Table 3. Seine catch by species and number of gear, Area 3, 1983 (preliminary data)[a].

Date	No. gear	Sockeye	Coho	Pink	Chum	Chinook	Sthd.[b]	J.chin.[c]
July 10/11	67	12,990	3,370	109,245	10,540	230	15	335
Week total	-	12,990	3,370	109,245	10,540	230	15	335
July 17/18	201	70,590	19,025	648,355	31,405	765	65	1,300
19	213	53,290	7,750	533,010	11,650	620	30	850
20	291	53,100	14,250	674,400	11,540	900	160	1,600
21	288	26,415	10,265	481,270	13,030	570	140	800
Week total	-	203,395	51,290	2,337,035	67,625	2,855	395	4,550
July 24/25	198	38,300	10,110	1,004,700	10,860	920	175	1,100
26	154	7,150	2,800	266,500	4,750	395	165	300
27	125	3,500	2,300	172,900	1,560	300	100	500
Week total	-	48,950	15,210	1,444,100	17,170	1,615	440	1,900
July 31/Aug. 1	88	8,045	4,900	305,300	6,190	340	210	330
Aug. 2	70	2,080	3,400	191,800	2,960	175	110	120
3	75	2,200	1,900	139,700	1,625	205	120	335
4	74	3,595	2,760	172,700	4,995	110	45	170
Week total	-	15,920	12,960	809,500	15,770	830	485	955
Aug. 7/8	32	13,950	3,930	386,750	1,730	205	295	310
9	38	5,120	2,445	166,500	885	210	215	360
10	45	3,325	2,175	175,700	1,875	270	120	500
11	46	4,265	3,130	150,155	1,860	175	34	0
Week total	-	26,660	11,680	879,105	6,350	860	664	1,170
Aug. 14/15	43	5,110	2,580	152,105	4,505	77	30	38
16	31	1,249	1,466	105,987	2,740	55	17	0
17	35	1,015	1,445	57,615	1,715	40	17	0
18	34	970	1,125	41,335	605	32	5	0
Week total	-	8,344	6,616	357,042	9,565	204	69	38
Aug. 21/22	8	95	420	8,725	710	5	3	0
23	1	9	40	605	55	2	0	0
Week total	-	104	460	9,330	765	7	3	0
Total for year	-	316,363	101,586	5,945,357	127,785	6,601	2,071	8,948

[a]Hailed catches subject to change when sales slip catches are processed.

[b]Steelhead.

[c]"Jack" chinook; chinook less than 2.3 kg (5 lb).

to the Nass also appeared to be above levels in recent years as indicated by the test fishery.

Given the above considerations, the decision was made to open Area 3 with the exception of M.U.'s 3-12 and 3-14 for one day to seines and gillnets on July 10. This coincided with the opening in Area 4. Management Unit 3-12 was kept closed to provide protection for Nass sockeye while M.U. 3-14 remained closed for the protection of Observatory Inlet chum. The pre-season fishing plan did not call for openings in Nasoga Gulf and Portland and Pearse canals (Fig. 1) during this week; however, these areas were opened to further assess pink and chum abundances that appeared promising based on the International Program tagging results.

Area 3 closed after 24 hours due primarily to low sockeye catches and concern over the Nass River escapement. Some consideration was given to keeping M.U.'s 3-3, 3-7, 3-9 and 3-11 open because of good pink and chum catches but it was felt that with Areas 1, 4 and 5 closing on schedule, the gear concentration would be much greater than the area could handle. Furthermore, the Nass sockeye stock could use the additional escapement and, since it was early in the pink run, lost catch this week could be made up in future weeks.

July 17 to July 24

Due to the very good pink catch the previous week, Area 3 was scheduled to open for one day commencing on July 17 in the same M.U.'s as in the previous week. The Area 3 opening would coincide with similar openings in Areas 4 and 5. It was anticipated that further fishing time would probably be granted in the form of 24-hour extensions.

The sockeye escapement improved slightly over the previous week with the projected total escapement rising to 165,000. Based on the average run timing for the last 10 years, approximately 75% of the run had escaped to date. The Cape Fox catch remained poor for the two-day fishery that ended on July 12 . As a result, M.U. 3-12 was kept closed for the protection of the remainder of the Nass sockeye run. Poor chum catches in M.U. 3-15 (upper Portland Canal) resulted in that area being closed after 24 hours .

Record pink catches in all parts of Area 3 resulted in three 24-hour extensions and the fishery was finally terminated on July 21. The fleet of over 100 gillnets and 200 seines took a record weekly catch of almost 2.4 million pink salmon. In addition, well over 200,000 sockeye were also caught raising concern over the weak Nass and Skeena sockeye runs. Gear levels increased markedly after the second extension as vessels that had previously been fishing in other areas moved into Area 3 when those areas closed.

July 24 to July 31

The record pink catch in the previous week in addition to good early pink and chum escapements observed in Area 3 streams and estuaries led to a two-day fishery beginning July 24 in M.U.'s 3-3, 3-7, 3-8, 3-9, 3-11 and 3-13. These M.U.'s included all areas where pink salmon could be harvested without unduly impacting the Skeena sockeye run; M.U.'s 3-1, 3-2 and 3-4

are considered to be high Skeena sockeye interception areas and consequently were scheduled for a one-day fishery coinciding with the opening in Area 4. Management units 3-12 and 3-14 were opened to gillnets for one day to assess chum and pink abundance. The Nass sockeye run was almost completely over by this time.

Management units 3-1, 3-2 and 3-4 were closed on schedule as was Area 4 to protect a weak Skeena sockeye run. Management unit 3-14 was also closed on schedule because of weak chum stocks. Fishing in M.U. 3-12 was extended for one day because of high pink and sockeye catches during the first 12 hours of the fishery. A record daily pink catch of slightly more than one million fish was taken in Area 3 during the first 24 hours of the fishery and since catch levels remained high during the next 12 hours, a one-day extension was granted for Area 3 excepting M.U.'s 3-1, 3-2, 3-4 and 3-14. Pink salmon catches declined by the third day, and the fishery was terminated after three days with a combined second and third day catch of only 460,000.

July 31 to August 7

Excellent pink salmon catch and escapement to date, as determined by the test fishery and stream surveys, resulted in a two-day fishery being announced for M.U.'s 3-3, 3-7 and 3-11. The Nass gillnet area (M.U. 3-12) was also opened for two days to harvest pink salmon bound for the Nass river. Management units 3-1, 3-2 and 3-4 were held to a one-day scheduled fishery in response to conservation concerns for Skeena sockeye. Portland Canal and Observatory Inlet were closed pending the outcome of chum escapement surveys. Steamer Passage and Nasoga Gulf (Fig. 1) were also closed, as escapements to the Kwinamass and Khutzeymateen rivers and pink catches in Nasoga Gulf had declined. The main run of pink salmon moved up toward the Nass River along the west side of Portland Inlet.

The Nass River test fishery terminated on July 31 and provided an estimated escapement of approximately 175,000 sockeye. However, the sockeye count through the fishway on the Meziadin River, the main Nass sockeye producer, was 106,000 by this date and based on past run timing, a Nass escapement of 200,000 was projected.

A much reduced fleet participated in the fishery which began on July 31, since openings in Johnstone Strait for Fraser sockeye had drawn a lot of the gear that had fished in Area 3 the previous week. In addition, with normal run timing pink catches should be declining. Management units 3-1, 3-2 and 3-4 were closed on schedule after 24 hours in keeping with the decision made prior to the fishery to manage these areas in comformity with Area 4 which was still experiencing conservation problems with a very weak Skeena sockeye run. Management units 3-3, 3-7 and 3-11 showed good pink catches in the first two days of the fishery averaging over 3,000 per seine on day one and 2,500 per seine on day two, and were subsequently extended for two additional 24-hour periods to August 4 . Conservation concerns for local chum and coho stocks as well as declining pink catches resulted in the closure of this fishery after four consecutive fishing days. The total weekly pink catch of almost 860,000 fish brought the season total to 4.9 million, almost twice the previous record net catch for Area 3 of 2.7 million in 1978.

August 7 to August 14

A two-day fishery was called for M.U.'s 3-1, 3-2, 3-3, 3-4, 3-7, 3-11, 3-12 and 3-13 to harvest pink salmon surplus to escapement requirements as determined by stream surveys. A small fleet varying from 32 to 46 seines and 36 to 89 gillnets participated in this fishery. The fishery was extended for 48 hours due to high pink catches. The outer portions of Area 3 were also extended this week coinciding with extensions in Area 4, required to crop the large pink run to the Skeena River. Since most of the Skeena sockeye run had entered the river by this time, the conservation measures instituted prior to this week were no longer required.

August 14 to August 21

The same M.U.'s of Area 3 that were opened the previous week were scheduled for a two-day fishery beginning on August 14. In addition, Nasoga Gulf and Observatory Inlet, with the exception of Alice Arm, were also opened for two days. Pink salmon escapement targets had been met or exceeded in all major systems and most chum systems were also doing well.

This two-day fishery was extended for two 24-hour periods because of good pink salmon catches; however, concern for chum, coho and late-run coastal pink stocks precluded any further extensions. Pink catches declined throughout the week from a high of 3,500 per seine on day one to 1,200 on day four.

August 21 to August 28

Concern for Dundas Island pink escapements which were returning from a very poor 1981 brood resulted in a closure of M.U. 3-1 this week. Observatory Inlet was closed because of poor chum escapements but all other areas that were open the previous week were again opened for a scheduled two-day fishery beginning on August 21. A fleet of 144 gillnets and 8 seines was counted at the start of the fishery and by day two these numbers were reduced to 72 and 1 respectively as some vessels moved out of the area and some combination vessels changed to troll.

Due to poor catch levels resulting from low abundance of local chum, coho and pink stocks, all of Area 3 was closed on schedule. The decision was made to close Area 3 for the remainder of the season as no further fishable stocks were anticipated.

Table 4 shows the annual commercial net catches of salmon in Area 3 by gear for the period 1963 to 1983. Compared to the preceeding five-year catch averages, the 1983 net catches were higher for all salmon species except chinook. In particular, record catches of coho (126,038) and pink salmon (6,203,331) were taken that year. Seines captured 94% of the total 1983 net catch.

OTHER FISHERIES, AREA 3

Indian Food Fishery

The native food fishery in Area 3 is conducted by six bands: Port Simpson and Kincolith in tidal waters and Greenville, Canyon City, Aiyansh and Kitwancool in non-tidal waters. The 1983 fishing pattern and catch are presented in Tables 5 and 6 respectively.

Table 4. Annual commercial salmon net catches by species and gear, Area 3, 1963-1983.

Year	Sockeye			Coho			Pink		
	Gillnet	Seine	Total	Gillnet	Seine	Total	Gillnet	Seine	Total
1963	28,502	716	29,218	19,477	677	20,154	113,730	13,371	127,101
1964	126,122	43,761	169,883	31,736	11,208	42,944	90,170	251,423	341,593
1965	119,582	16,608	136,190	70,863	16,685	87,548	254,626	391,212	645,838
1966	140,182	34,223	174,405	88,233	19,926	108,159	353,973	256,400	610,373
1967	217,477	222,075	439,552	22,829	18,217	41,046	144,242	374,024	518,266
1968	204,085	54,949	259,034	62,145	24,283	86,428	184,818	1,024,967	1,209,785
1969	156,879	43,092	199,971	16,960	9,770	26,730	84,728	108,347	193,075
1970	108,696	15,447	124,143	61,976	14,539	76,515	394,977	414,961	809,938
1971	138,329	55,352	193,681	42,614	15,340	57,954	81,482	193,486	274,968
1972	190,570	38,993	229,563	55,005	8,950	63,955	107,661	946,264	1,053,925
1973	513,703	45,089	558,792	12,858	3,539	16,397	70,478	146,110	216,588
1974	316,849	202,845	519,694	17,581	3,941	21,522	36,416	73,584	110,000
1975	89,487	40,381	129,868	24,863	5,063	29,926	39,045	123,183	162,228
1976	154,734	65,728	220,462	12,258	6,224	18,482	51,998	107,522	159,520
1977	406,211	320,381	726,592	30,360	17,062	47,422	332,862	1,789,114	2,121,976
1978	174,774	112,156	286,930	30,330	57,147	87,477	205,699	2,467,376	2,673,075
1979	94,028	123,635	217,663	14,349	23,372	37,721	40,307	185,155	225,462
1980	68,099	99,053	167,152	16,760	20,202	36,962	140,159	714,832	854,991
1981	153,303	250,837	404,140	8,232	10,288	18,520	113,478	534,113	647,591
1982	252,957	393,917	646,874	20,203	71,450	91,653	62,091	984,009	1,046,100
1983[b]	77,707	316,363	394,070	24,452	101,586	126,038	257,974	5,945,357	6,203,331
Mean 1963-67	126,373	63,477	189,850	46,628	13,343	59,970	191,348	257,286	448,634
Mean 1968-72	159,712	41,567	201,278	47,740	14,576	62,316	170,733	537,605	708,338
Mean 1973-77	296,197	134,885	431,082	19,584	7,166	26,750	106,160	447,903	554,062
Mean 1978-82	148,632	195,920	344,552	17,975	36,492	54,467	112,347	977,097	1,089,444

Year	Chum			Chinook[a]			Steelhead		
	Gillnet	Seine	Total	Gillnet	Seine	Total	Gillnet	Seine	Total
1963	23,247	4,952	28,199	6,456	291	6,747	466	8	474
1964	43,752	48,867	92,619	11,868	1,266	13,134	934	153	1,087
1965	29,740	10,965	40,705	12,354	8,336	20,690	1,105	108	1,213
1966	57,052	15,695	72,747	12,081	1,042	13,123	2,804	198	3,002
1967	45,841	69,267	115,108	27,400	11,587	38,987	1,512	448	1,960
1968	139,977	96,283	236,260	14,527	5,228	19,755	2,223	147	2,370
1969	58,639	8,221	66,860	14,742	4,416	19,158	1,018	167	1,185
1970	158,661	25,512	184,173	12,157	1,332	13,489	825	28	853
1971	53,235	15,234	68,469	10,886	6,932	17,818	1,310	197	1,507
1972	301,667	50,526	352,193	13,387	5,722	19,109	1,778	300	2,078
1973	169,904	70,357	240,261	12,342	4,611	16,953	993	45	1,038
1974	160,550	54,544	215,094	9,581	6,643	16,224	868	76	944
1975	21,782	5,189	26,971	9,863	7,282	17,145	538	58	596
1976	19,000	7,236	26,236	9,053	1,866	10,919	584	135	719
1977	142,576	143,099	285,675	8,452	11,272	19,724	1,406	471	1,877
1978	69,761	79,754	149,515	6,963	23,832	30,795	1,359	748	2,107
1979	41,125	21,573	62,698	3,552	11,538	15,090	660	257	917
1980	204,068	97,625	301,693	2,074	9,051	11,125	1,257	649	1,906
1981	22,934	20,974	43,908	4,385	7,398	11,783	1,177	705	1,882
1982	19,704	51,201	70,905	11,262	28,358	39,620	2,215	1,197	3,412
1983[b]	55,101	127,785	182,886	1,515	15,549	17,064	1,739	2,071	3,810
Mean 1963-67	39,926	29,949	69,876	14,032	4,504	18,536	1,364	183	1,547
Mean 1968-72	142,436	39,155	181,591	13,140	4,726	17,866	1,431	168	1,599
Mean 1973-77	102,762	56,085	158,847	9,858	6,335	16,193	878	157	1,035
Mean 1978-82	71,518	54,225	125,744	5,647	16,035	21,683	1,334	711	2,045

[a]Chinook catch includes jack chinook (< 2.3 kg).

[b]Preliminary data.

Table 5. Indian Food Fishery pattern, Area 3, 1983.

Location	Period	Fishing pattern
Kincolith	April 28 to October 29	2 days per week - Thursday to Saturday.
	July 5 to July 7	Special 2-day fishery.
Alice Arm, Illiance R.	October - November	No fishery.
Port Simpson	All season.	17 days - coordinated with DFO.
Greenville, Canyon City, Aiyansh	All season.	4 days per week.

Table 6. Indian Food Fishery catch, Area 3, 1964-1983.

Year	Sockeye	Coho	Pink	Chum	Chinook
1964	10,045	4,830	3,130	1,170	2,150
1965	12,483	3,432	3,704	149	544
1966	113,481	3,639	1,193	1,012	629
1967	12,293	3,120	1,774	897	3,169
1968	12,216	7,156	2,604	524	1,213
1969	10,765	1,266	494	301	175
1970	9,231	846	3,878	866	676
1971	8,177	1,804	1,722	127	401
1972	8,535	1,602	583	555	241
1973	11,437	886	1,020	717	399
1974	14,425	1,590	925	680	305
1975	5,279	711	3,660	474	280
1976	29,383	1,730	2,066	881	494
1977	34,983	1,136	3,080	1,065	2,058
1978	15,256	3,661	863	758	1,158
1979	16,137	2,321	2,625	1,493	1,423
1980	20,014	2,494	1,865	1,019	1,461
1981	16,056	1,742	1,786	553	1,214
1982	29,781	3,921	1,682	950	1,555
1983	15,622	4,301	5,945	1,879	5,456

Sport fishery

The sport fishery in Area 3 is divided into a tidal and non-tidal fishery each with separate regulations. Sport fishery catches are presented in Table 7.

ESCAPEMENTS, AREA 3

The annual escapements in Area 3 by species for the period 1966 to 1983 are presented in Table 8. Escapements in 1983 were down from previous levels for some species such as chinook but were well above earlier levels for other species such as pink. The sockeye escapement of 195,000 was below the optimum of 220,000 and mainly represented a shortfall in escapement to the non-Meziadin systems (i.e. Dandochax, Bowser and Fred Wright lakes). The pink escapement of 737,335 was the largest on record and supports earlier suspicions that a high proportion of the Area 3 pink catch was of Canadian origin. The Nass River tributaries (Iknouk and Ishkheenickh rivers) received particularly high pink escapements. Although the chum escapement of 46,900 was an improvement over recent year levels, it was well below the optimum of 90,000. Similarly, the coho escapement of 33,000 was slightly above recent levels but was only about two-thirds of the optimum level. Chinook escapement of 8,305 was again disappointing; it was less than one-third of the optimum level but very near the recent years' escapement level.

REVIEW, AREA 3

The pre-season Area 3 stock expectations and fishing plans gave a good indication of what occurred in the 1983 season. The run strength of all species except pink was fairly accurately forecast and although the pink expectation was for an above average return, a total catch plus escapement of 6.9 million was not anticipated. Pink runs in adjacent areas (i.e. Area 4 and southern S.E. Alaska) also greatly exceeded expectations indicating extremely high survivals region-wide for the 1981 brood pink stocks.

The pre-season fishing plan called for a delay in the start of the gillnet fishery to June 26 due to weak chinook expectations. However, a slightly weaker than expected sockeye return and late run timing caused a further delay to July 10. The seine fishery which was scheduled to commence on July 3 was also delayed to July 10. Expected chum salmon conservation measures in Observatory Inlet were instituted as were cooperative measures in Portland Canal with the U.S.

When the fishery began, it became evident due to the high catch that the pink run was either very early or much larger than forecast. The extensions of the fishery after the first week were in response to the large commercial pink catches as well as test fishery results, stream surveys and International Tagging Program catches. Management units 3-1, 3-2 and 3-4 were managed with the Area 4 fishery after the first four-day fishery and, in retrospect, should have been coordinated earlier when the Skeena sockeye problem was initially identified. Nasoga Gulf was open for most of the season and Steamer Passage which is usually closed as a sanctuary area was open on occasion to harvest surplus pink salmon.

Chum salmon were generally protected in terminal areas because of the below average stock expectations and the heavy exploitation in the outside

Table 7. Sport fishery catch, Area 3, 1971-1983.

Year	Sockeye	Coho	Pink	Chum	Chinook
1971	-	205	-	-	336
1972	-	325	-	-	462
1973	-	348	15	-	402
1974	-	800	10	-	295
1975	-	1,120	45	-	690
1976	-	330	-	-	306
1977	-	1,075	-	-	775
1978	-	2,370	-	-	1,265
1979	-	830	-	-	1,471
1980	-	1,105	75	-	3,202
1981	-	2,638	-	-	953
1982	-	1,273	50	-	1,676
1983	-	3,220	1,000	-	2,658

Table 8. Annual spawning escapements for sockeye, coho, pink, chum and chinook, Area 3, 1966-1983[a].

Year	Sockeye	Coho	Pink	Chum	Chinook
1966	112,959	81,150	304,700	42,025	19,850
1967	80,728	40,450	66,925	45,950	27,200
1968	98,855	48,025	246,325	60,750	26,100
1969	317,656	23,000	52,475	27,450	28,875
1970	117,703	46,750	218,300	35,550	18,350
1971	248,074	46,125	122,075	27,825	17,900
1972	178,716	20,250	244,250	81,200	20,100
1973	285,282	9,925	69,786	56,100	3,550
1974	193,703	16,375	84,315	121,710	3,400
1975	74,602	15,385	111,208	33,025	5,825
1976	143,405	32,600	154,225	6,065	5,592
1977	400,371	35,605	229,155	55,275	9,060
1978	144,610	33,100	401,445	77,970	10,190
1979	212,920	12,680	49,540	40,292	7,030
1980	155,521	22,505	130,777	54,794	9,352
1981	225,668	31,079	204,425	16,459	8,325
1982	281,070	31,255	426,395	29,475	6,475
1983	195,000	33,000	737,335	46,900	8,305

[a]Meziadin fishway installed in 1966.

seine fishery. Only five fishing days were permitted in Observatory Inlet and the top of Portland Canal.

In most cases it appeared that the in-season information was adequate for managing the fishery. The exception to this might be the in-season assessment of chum stock strength in terminal areas such as Observatory Inlet and Portland Canal. In these areas it was necessary to conduct exploratory fisheries that were evaluated in a relative subjective manner.

Even with a considerable delay in the start of the Area 3 fishery and specific closures during the pink fishery, the escapement target for sockeye of 220,000 was not met. All in-season stock indicators seemed to be correct in assessing the weakness of this stock. However, by limiting the fishing time, no harvest opportunities were lost and no stock surpluses were identified after the closure of the fishery.

Although the pink escapement exceeded the optimum by more than three times, additional harvest pressure on this stock was not possible due to concerns for other stocks, most noteably Area 3 chum and coho, and Skeena sockeye. All in-season indicators were again correct in determining that the pink escapement would be one of the largest on record. Hailed catch estimates and the Nass test fishery were especially valuable in this regard.

The chum escapement was dependent largely on the intensive pink fishery and even with closures in terminal areas did not reach optimum levels. A four-day fishery in August in Observatory Inlet might not have been scheduled in retrospect, but with the very small expected fleet size and the closure of a portion of Alice Arm, only a small catch was expected.

Despite the very low chinook exploitation in the net fishery, the chinook escapement was less than one-third of the optimum, continuing a long-term declining trend. The Indian Food Fishery further reduced the stock once it entered the Nass River but heavy exploitation by interception fisheries in mixed stock areas continues to be the main cause of the chinook decline. Assessment of chinook spawning areas could be greatly improved with additional people, flying time and systematic assessment techniques; this would improve the ability by DFO to detect any positive or negative changes in stock status resulting from fishery adjustments.

Coho management remains the weakest component of the DFO management because of the inability to collect high quality escapement data and the lack of information on stock mixtures in fishing areas.

AREA 4

1983 PRE-SEASON STOCK EXPECTATIONS

The 1983 stock expectations and fishing plans for Area 4 are described in detail in Appendix 2 and are reviewed briefly below.

Sockeye

Skeena River sockeye are composed largely of 4-and 5-year old fish that have spent one year in freshwater. Data on Skeena River sockeye are the most complete of any North Coast salmon stock. An adult fence count and a mark-

recapture smolt estimate on the Babine River provide a good part of this expanded data base. Three indicators are considered when forecasting returns. These are: 1) rate of return per spawner, 2) smolt-to-adult survival rate and 3) return of younger age classes from the same brood year.

For the 1983 return of 4-year old fish, a very poor return of 3-year old jack sockeye in 1982 coupled with a record smolt output of 197 million in 1981 produced widely divergent return forecasts. The point estimate of 2.17 million was expected to be broken down by age as follows:

Age 4 -	1,500,000
Age 5 -	600,000
Other ages -	70,000
Total -	2,170,000

Approximately 200,000 of these fish were expected to be caught in Area 3, with 1.97 million expected into Area 4. The range about the 2.17 million estimate was very wide (1.0 to 5.0 million) due to the uncertainty in the age 4 forecast but since in recent years the age 3 indicator seemed to be more reliable than the smolt indicator, a conservative point estimate was selected.

The strength of the run was again expected to be from the Babine Lake system and in particular from the two spawning channels.

Pink

A slightly better than optimum brood year escapement of 1.19 million was expected to produce a pink return of 2.35 million based on an average odd-year rate of return of 1.97 to 1. Returns to the Lakelse River in particular were expected to be strong since the brood year escapement of 700,000 was one of the best on record.

Chinook, chum and coho

Very week returns were expected for these three species due to poor brood year spawning escapements.

1983 PRE-SEASON FISHING PATTERN, AREA 4

No net fisheries were anticipated in Area 4 until July 3 in order to protect the very weak chinook and early unenhanced sockeye runs. Beginning on July 3 and continuing until late August, the net fishery would be managed according to the abundance of sockeye and pink salmon returning to the Skeena River. Weekly escapement targets for these stocks would determine the level of fishing effort that would be permitted. In addition, consideration would be given to weaker non-target stocks by fishing at a less than maximum exploitation rate on large target species returns.

Taking the above into account, a pre-season fishing plan was developed in consultation with the Skeena River Advisory Board that would permit gillnet fishing to commence in Area 4 on July 3 and terminate for the season by August 21. A total of 20 fishing days were scheduled during this period with peak effort of 4 days fishing per week targeted at the peaks of the sockeye and pink runs during the weeks beginning July 17 and August 7 respec-

tively. In addition, seines were to be permitted into Area 4 at the peak of the sockeye run during the week of July 17.

Trolling was scheduled to open in the outside M.U.'s of Area 4 on April 15 and would only open during net fishing times in inside waters.

1983 WEEKLY FISHING SUMMARY, AREA 4

Table 9 summarizes weekly in-season fishery management and its rationale. Table 10 presents weekly gillnet catches in Area 4 by species and weekly number of gear (no seine catches were made). Figure 2 shows Area 4 management units (M.U.).

July 3 to July 10

The Skeena River test fishery, which was operating since June 12, indicated a very poor escapement of early-run sockeye. A very high percentage of age 5 fish in the escapement created concern since the 4-year old age class was expected to comprise the bulk of the run. In addition, the Area 4 Indian Food Fishery and the International Tagging Program operating in Areas 1, 3, 4 and 5 and at Noyes Island in Alaska were experiencing little success in capturing sockeye. Based on this information it was decided that a closure was required. Some consideration was given to conducting a one-day fishery that was scheduled in the pre-season fishing plan to further assess the run strength; however, with Area 3 recommending a closure to protect the Nass sockeye run, too large a fleet would converge on Area 4 for the intended purpose.

July 10 to July 17

A one-day fishery was scheduled beginning on July 10. Although sockeye escapement past the test-fishery was still poor, the return in 1979, the major brood year, was also weak in early July and generally a week behind in run timing. Hence there was still some optimism that the 1983 run would return as expected. Sockeye escapement through the test fishery to July 10 was 72% of the previous 10-year average to this date. The International Tagging Program and Indian Food Fisheries in Area 4 also suggested that the run was weak.

In total, 443 gillnets participated in this opening. During the first 12 hours, catches of all species were very poor with the sockeye catch averaging less than 30 fish per boat. In addition, the sockeye escapement past the test fishery remained poor and the fishery was terminated as scheduled.

July 17 to July 24

According to the pre-season plan, seines were to be permitted into Area 4 during this week. However, the weakness in the Skeena sockeye run resulted in a conservative one-day opening for gillnets only on July 17. Sockeye escapement to July 20 was 55% of the forecast escapement to that date while the pink escapement was beginning to increase. The sockeye stock was still comprised largely of age 5 fish, with only a slight increase in the percentage of 4-year olds.

The Area 4 sockeye catch during the preceeding week was well below average as was the catch at Noyes Island, Alaska, a major interception fishery.

Table 9. Weekly net fishing season: pre-season plans, in-season management and rationale for management, Area 4, 1983

Date	Pre-season fishing plans[a]	In-season management[a]	Rationale for in-season management
July 3-10	Open to gillnets 1 day.	No opening.	-low Skeena River sockeye stocks indicated by test fishery, Indian Food Fishery and International Tagging Program in Area 4 -need to conserve Skeena River sockeye stocks -concern over heavy gear concentration should an opening be called in Area 4 since Area 3 was to be closed to fishing
July 10-17	Open to gillnets 3 days.	Opened to gillnets 1 day.	-fishery restricted due to low Skeena River sockeye escapement indicated by test fishery, Indian Food Fishery and International Tagging Program in Area 4 -fishery closed due to poor catches of all species and continued poor sockeye escapement to Skeena River
July 17-24	Open to nets 4 days.	Opened to gillnets 1 day; extended 1 day.	-fishery restricted due to continued weak sockeye runs indicated by low catches during preceeding week, and continued low catches in International Tagging Program and Indian Food Fishery -seines excluded from fishery due to weak Skeena sockeye run -fishery extended due to good initial catches of sockeye and other species and stable test fishery escapement -fishery closed since sockeye catch and escapement declined dramatically
July 24-31	Open to gillnets 3 days.	Opened to gillnets 1 day.	-fishery restricted due to weak sockeye stocks -fishery closed due to continued poor sockeye escapements and lower than expected catches
July 31-Aug. 7	Open to gillnets 3 days.	Opened to gillnets 1 day.	-fishery restricted due to weak sockeye stocks; this rationale supported by Skeena River Advisory Board

Table 9 (Cont'd).

Date	Pre-season fishing plans[a]	In-season management[a]	Rationale for in-season management
Aug. 7-14	Open to gillnets 4 days.	Opened to gillnets 2 days; extended 2 days.	-pink run apparently very strong and sockeye run dwindling -fishery extended due to excellent pink catches and almost completed sockeye run
Aug.14-21	Open to gillnets 2 days.	Opened to gillnets 2 days; extended 2 days.	-excellent pink catch the previous week and larger than optimum pink escapement -fishery extended due to excellent pink catches -fishery closed due to concern for species with weak returns
Aug. 21-28	Fishery closed by August 21.	Opened to gillnets 2 days.	-fishery opened to harvest pink salmon surplus to escapement requirements -fishery closed due to concern for coho, chum and steelhead stocks and some low local returns of pink salmon -seasonal fishery terminated August 23 since no further fishable stocks were anticipated

[a]For restrictions on management units see text and Appendix 2.

Table 10. Gillnet catch by species and number of gear, Area 4, 1983 (preliminary data)[a].

Date	No. gear	Sockeye	Coho	Pink	Chum	Chinook	Sthd.[b]	J.chin[c]
July 10/11	443	17,250	3,567	4,410	4,325	669	77	159
Week total	-	17,250	3,567	4,410	4,325	669	77	159
July 17/18	610	80,468	2,419	32,346	2,547	275	437	56
19	610	36,043	2,495	26,229	2,174	406	441	245
Week total	-	116,511	4,914	58,575	4,721	681	878	301
July 24/25	591	70,796	3,516	78,947	707	425	305	113
Week total	-	70,796	3,516	78,947	707	425	305	113
July 31/Aug.1	495	38,496	4,805	123,667	1,557	249	706	40
Week total	-	38,496	4,805	123,667	1,557	249	706	40
August 7/8	326	32,620	2,826	91,750	707	78	122	40
9	300	15,530	2,300	72,365	1,010	92	209	30
10	250	7,710	1,492	54,660	792	240	143	25
11	210	7,420	1,512	50,776	408	49	105	25
Week total	-	63,280	8,130	269,551	2,917	459	579	120
Aug. 14/15	212	6,025	1,710	55,210	874	34	218	20
16	200	5,175	1,340	49,010	595	135	615	20
17	150	3,725	1,175	40,125	575	75	310	10
18	142	3,062	1,050	38,968	380	70	285	10
Week total	-	17,987	5,275	183,313	2,424	314	1,428	60
Aug. 21/22	86	1,207	1,137	24,353	559	11	138	3
23	74	618	838	13,480	432	20	95	5
Week total	-	1,825	1,975	37,833	991	31	233	8
Total for year	-	326,145	32,182	756,296	17,642	2,828	4,206	801

[a]Hailed catches subject to change when sales slip catches are processed.

[b]Steelhead.

[c]"Jack" chinook; chinook less than 2.3 kg (5 lb).

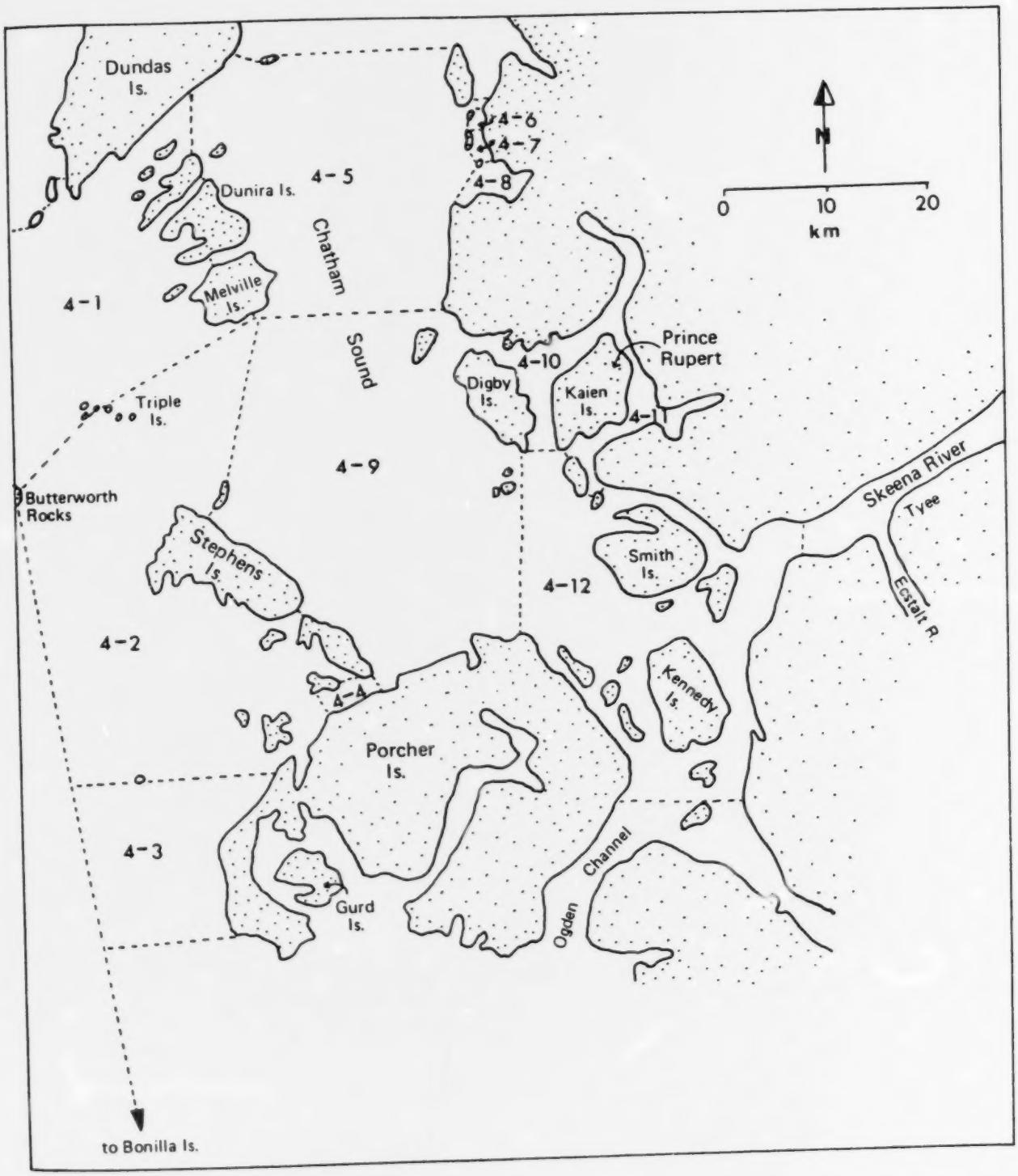

Fig. 2. Location of Area 4 management units, B.C.

Additional causes for concern were the continuing low sockeye catches in the International Tagging Program and the Indian Food Fishery.

At the time of the opening on July 17, 610 gillnets were counted in Area 4. Catches of all species including sockeye during the first 12 hours of the opening were surprisingly good and since the test fishery escapement estimate remained stable the fishery was extended for 24 hours.

During the next 24 hours the sockeye catch declined dramatically, as did the escapement. Although the catch of other species held up, the fishery was terminated on July 19 for sockeye conservation.

July 24 to July 31

Due to the weakness in sockeye stocks, only a one-day fishery was scheduled for this week. The age 4 component continued to comprise less than one-half of the total sockeye stock. At this time the total stock was approximately 55% of the pre-season forecast and 65% of the 10-year average stock. As of July 27, the sockeye escapement was 540,000 while the pink escapement was 236,000. At this time the pink stock appeared to be at least as strong as expected.

Overnight catches of sockeye were poor while pink catches increased substantially over the previous week. During the morning of July 25 a good part of the fleet of 591 gillets began to move in search of better fishing with a large number of vessels converting to troll gear. The fishery was closed on July 25 as scheduled due to continued poor sockeye escapements and lower than expected catch.

July 31 to August 7

Sockeye concerns again resulted in a one-day fishery being scheduled on July 31. Based on the catch and escapement information to date, the final projection of Area 4 sockeye stock was 1.1 million which was well below the forecast stock of 1.97 million. Also at this time, the Skeena pink run was beginning to peak with indications of a total stock of 1.8 million or larger. Based on this information and after consulting with the Skeena River Advisory Board it was decided to fish conservatively in early August so that a larger sockeye escapement would be realized. After this period, a more intense fishery could take place if pink stock levels warranted it. Although this approach would result in a larger than optimum pink escapement, it was felt that the trade-off for a near-optimum sockeye escapement was acceptable.

During the first 12 hours of the fishery, catches of sockeye and pink in the Skeena River were good while catches in the outside area were poor. Based on the poor outside catches and declining escapements of primarily unenhanced Babine River sockeye stocks, Area 4 was closed as scheduled on August 2. Projections made on average brood year run timing were 1.1 million for sockeye and 1.7 million for pink.

August 7 to August 14

A two-day fishery was scheduled beginning on August 7 as the sockeye run was dwindling and the pink run appeared to be very strong. Based on

escapement information at the Babine River fence, it appeared that the final sockeye count would reach 840,000. This indicated that the test fishery may have underestimated the escapement past the commercial fishery. For this opening it was decided to lift the maximum mesh size restriction since the chinook run was over and the coho abundance seemed high based on the previous week's catch.

After 36 hours of fishing, the pink catch was good throughout Area 4 and appeared to be holding. The sockeye catch was larger than anticipated during the first 24 hours but dropped quickly during the next 12 hours. Based on the excellent pink catch and an almost completed sockeye run, the fishery was extended for an additional 48 hours. During the last 24 hours of the extension the pink catch began to decline.

August 14 to August 21

An excellent pink catch during the previous week and a larger than optimum pink escapement resulted in a two-day fishery beginning on August 14. As of August 17 the pink escapement was 1,123,000 while the sockeye escapement was 787,000. The possibility of extensions seemed likely as pink escapements continued to climb.

A gillnet fleet of 212 was present at the opening. During the first 24 hours the pink catch was excellent throughout Area 4 indicating continued strength in the run. This resulted in a 48-hour extension during which time the catch remained high. On the fourth day the catch declined slightly and concerns for species with weak returns resulted in the fishery being terminated on August 18.

August 21 to August 28

A two-day opening beginning on August 21 was scheduled to harvest pink salmon surplus to escapement requirements. The maximum mesh size restriction was again instituted to protect weak coho, chum and steelhead stocks which had earlier appeared strong. Early in the fishery the pink catch was good; however, the fleet had declined to less than 100 gillnets as many vessels had moved to other areas.

Due to concern for coho, chum and steelhead stocks as well as some low returns of pink salmon to nearby coastal streams, the fishery was terminated on August 23. This was followed by the decision to close Area 4 for the remainder of the season as no further fishable stocks were expected.

Table 11 shows the annual commercial net catches of salmon in Area 4 by gear for the period 1963 to 1983. Compared to the preceeding five-year catch averages, the 1983 net catches were lower for all salmon species except pink salmon. In particular, the sockeye catch of 326,145 was one of the lowest on record. No seine catches were made in 1983; during the last 20 years this occurred only once before, in 1966.

OTHER FISHERIES, AREA 4

Indian Food Fishery

The 1983 fishing pattern and catch for the Indian Food Fishery in Area 4 are presented in Tables 12 and 13 respectively.

Table 11. Annual commercial salmon net catches by species and gear, Area 4, 1963-1983.

Year	Sockeye			Coho			Pink		
	Gillnet	Seine	Total	Gillnet	Seine	Total	Gillnet	Seine	Total
1963	141,516	648	142,164	48,646	390	49,036	466,020	15,476	481,496
1964	765,042	718	765,760	82,495	248	82,743	939,650	3,664	943,314
1965	2,944,213	44	2,944,257	53,708	100	53,808	144,259	472	144,731
1966	592,582	0	592,582	124,952	0	124,952	1,046,315	0	1,046,315
1967	1,043,659	125	1,043,784	49,178	67	49,245	415,240	1,852	417,092
1968	779,839	906	780,745	74,440	761	75,201	351,786	29,163	380,949
1969	536,205	404	536,609	40,779	122	40,901	363,199	767	363,966
1970	535,439	349	535,788	63,597	162	63,759	770,456	997	771,453
1971	834,165	23,251	857,416	83,458	1,773	85,231	833,444	24,254	857,698
1972	646,515	27,739	674,254	69,394	2,650	72,044	490,855	178,430	669,285
1973	1,231,431	75,801	1,307,232	39,187	1,975	41,162	536,248	65,484	601,732
1974	1,155,855	224,964	1,380,819	24,247	3,696	27,943	219,704	80,015	299,719
1975	433,467	54,535	488,002	23,252	4,741	27,993	409,051	109,033	518,084
1976	635,150	16,476	651,626	26,205	981	27,186	176,687	29,584	206,271
1977	813,988	44,904	858,892	57,006	2,919	59,925	1,062,708	321,003	1,383,711
1978	394,214	11,733	405,947	55,442	3,693	59,135	286,595	79,817	366,412
1979	1,214,058	12,757	1,226,815	42,259	5,208	47,467	605,277	40,269	645,546
1980	328,320	5,262	333,582	20,358	1,096	21,454	161,436	12,345	173,781
1981	1,362,820	187,085	1,549,905	29,062	3,926	32,988	846,828	295,706	1,142,534
1982	1,184,509	427,678	1,612,187	27,651	19,975	47,626	13,478	108,827	122,305
1983[b]	326,145	0	326,145	32,182	0	32,182	756,296	0	756,296
Mean 1963-67	1,097,402	384	1,097,786	71,796	201	71,997	602,297	5,366	607,663
Mean 1968-72	666,433	10,530	676,962	66,334	1,094	67,427	561,948	46,722	608,670
Mean 1973-77	853,978	83,336	937,314	33,979	2,862	36,842	480,880	121,024	601,903
Mean 1978-82	896,784	128,903	1,025,687	34,954	6,780	41,734	382,723	107,393	490,116

Year	Chum			Chinook[a]			Steelhead		
	Gillnet	Seine	Total	Gillnet	Seine	Total	Gillnet	Seine	Total
1963	25,831	695	26,526	10,125	9	10,134	2,840	3	2,843
1964	37,490	533	38,023	19,004	47	19,051	10,168	17	10,185
1965	7,689	28	7,717	12,885	22	12,907	2,731	0	2,731
1966	37,265	0	37,265	24,217	0	24,217	14,398	0	14,398
1967	26,500	31	26,531	36,378	5	36,383	10,186	0	10,186
1968	44,027	854	44,881	23,757	61	23,818	8,175	1	8,176
1969	16,505	68	16,573	11,385	36	11,421	5,324	0	5,324
1970	33,211	113	33,324	7,716	66	7,782	4,732	1	4,733
1971	37,918	838	38,756	9,844	1,321	11,165	8,378	21	8,399
1972	115,698	3,631	119,329	9,872	355	10,227	7,582	32	7,614
1973	82,573	6,429	89,002	14,091	1,521	15,612	4,339	35	4,374
1974	51,095	9,813	60,908	11,436	2,406	13,842	4,035	91	4,126
1975	17,316	5,325	22,641	7,451	2,558	10,009	3,018	128	3,146
1976	11,722	2,156	13,878	4,761	459	5,220	2,819	21	2,840
1977	58,252	8,287	66,539	12,836	1,390	14,226	4,644	83	4,727
1978	54,448	7,014	61,462	7,574	1,733	9,307	3,867	25	3,892
1979	51,830	2,673	54,503	11,692	2,329	14,021	5,340	39	5,379
1980	67,546	3,124	70,670	7,155	397	7,552	3,994	12	4,006
1981	35,226	7,736	42,962	18,131	5,123	23,254	8,972	280	9,252
1982	17,492	11,752	29,244	9,170	6,017	15,187	9,614	916	10,530
1983[b]	17,642	0	17,642	3,629	0	3,629	4,206	0	4,206
Mean 1963-67	26,955	322	27,277	20,522	21	20,543	8,065	10	8,075
Mean 1968-72	49,472	1,101	50,573	12,515	368	12,883	6,838	14	6,852
Mean 1973-77	44,192	6,402	50,594	10,115	1,667	11,782	3,771	72	3,843
Mean 1978-82	45,308	6,460	51,768	10,744	3,120	13,864	6,357	254	6,612

[a]Chinook catch includes jack chinook (< 2.3 kg).

[b]Preliminary data.

Table 12. Indian Food Fishery pattern, Area 4, 1983.

Location	Period	Fishing pattern
Area 4 (tidal)	January to June 10.	2 days per week.[a]
	June 11 to end of commercial fishery.	1 day per week.
	End of commercial fishery to end of salmon runs.	2 days per week.
Terrace	January to June 12.	2 days per week.
	June 13 to August 7	7 days per week.
	August 8 to September 25.	2 days per week.
	September 26 to October 30.	7 days per week.
Hazelton	January to June 30.	3 days per week.
	July 1 to October 30.	7 days per week.
Babine	All season[b]	7 days per week.

[a]Scheduled to avoid conflict with the commercial fishery.

[b]From the start of the sockeye run to the end of October.

Table 13. Indian Food Fishery catch, Area 4, 1964-1983.

Year	Sockeye	Coho	Pink	Chum	Chinook
1964	39,549	3,365	2,503	316	1,903
1965	38,492	8,040	1,503	222	3,110
1966	34,231	5,640	2,744	464	2,318
1967	39,338	3,590	6,219	299	2,899
1968	37,244	4,997	3,140	385	2,223
1969	37,396	2,083	2,190	29	1,561
1970	50,122	2,558	3,229	355	3,338
1971	79,031	5,921	14,465	1,095	4,051
1972	51,843	2,300	6,806	557	2,141
1973	69,729	2,111	8,027	522	1,843
1974	82,800	2,181	3,923	500	2,266
1975	85,955	5,245	6,680	650	3,526
1976	81,196	3,380	18,035	450	2,388
1977	104,143	3,855	13,752	1,000	4,940
1978	115,920	6,215	20,152	100	4,203
1979	151,500	2,258	14,800	340	4,265
1980	138,030	4,915	5,670	1,150	8,660
1981	116,340	5,275	23,610	438	9,805
1982	211,657	24,500	38,327	300	11,800
1983	137,916	21,690	97,285	290	9,826

Sport fishery

The sport fishery in Area 4 is divided into a tidal and non-tidal fishery each with separate regulations. Sport fishery catches are presented in Table 14.

ESCAPEMENTS, AREA 4

The annual escapements in Area 4 by species for the period 1963 to 1983 are presented in Table 15. The total 1983 sockeye return (catch plus escapement) of almost 1.6 million was comparable to levels observed in the period prior to the early 1970's but was down substantially from recent years. A poor age 4 return from the 1979 brood accounted for this decline. The sockeye escapement of 892,000 was close to the optimum level of 900,000 (excludes the Indian Food Fishery catch of approximately 100,000 sockeye). However, the observed escapement was distributed heavily in favour of the spawning channel systems (59% of total escapement) and provided less than optimum escapements to unenhanced systems.

The 1983 pink escapement of 2,542,005 was by far the largest escapement on record and was about 2.5 times the optimum level. High escapements to the Babine and Lakelse rivers accounted for the majority of that total. Lack of funds prevented surveys of Kispiox River, a major odd-year pink producer in 1983.

Chum escapement in 1983 of 1,563 was the lowest on record. The Ecstall River, in particular, showed a severe decline. Coho escapement of 19,055 was below the previous levels but appeared to be stable; however, due to a combination of factors (poor viewing conditions, inaccessibility, protracted spawning period) coho abundance is difficult to estimate. The chinook escapement of 16,541 continued the downward trend; the Bear, Kitsumkalum and Morice rivers provided the bulk of chinook escapements.

REVIEW, AREA 4

The pre-season stock expectation for Skeena sockeye called for an above average return of almost 2.2 million with 11 fishing days during July. The actual return was slightly less than 1.6 million and required only 4 fishing days in July to harvest the surplus to spawning requirements. Although an above average pink run was forecast, the run of over 3.0 million was unexpected. The fishing plan for August was not much different than planned except for an additional fishery during the week of August 21. Forecasts of other species were fairly accurate as they were continuations of long term trends.

Early sockeye run strength was poor as indicated by the Skeena test fishery at Tyee (Fig. 2), the Indian Food Fishery in Area 4 and the International Tagging Program catches. These factors forced a one-week delay in the start of the fishery and only four total fishing days in July. In addition, the seine fishery, scheduled for July 17 was cancelled.

Very high pink abundance required a heavy exploitation rate beginning in the third week of July. However, the poor sockeye run precluded a heavy fishery at this time. After consultation with the Skeena River Advisory Board it was decided to fish conservatively on the pink run so that more sockeye

Table 14. Sport fishery catch, Area 4, 1968-1983.

Year	Sockeye	Coho	Pink	Chum	Chinook
1968	-	2,182	40	-	2,902
1969	-	553	-	-	1,906
1970	-	1,399	-	-	2,470
1971	-	450	0	-	754
1972	-	3,712	17	-	2,523
1973	-	1,861	32	-	2,178
1974	-	2,517	-	-	2,856
1975	-	2,296	5	-	3,961
1976	-	3,449	330	-	2,187
1977	-	3,601	400	-	2,858
1978	-	8,340	2,060	-	6,810
1979	-	2,099	910	65	2,782
1980	-	2,585	220	-	4,995
1981	-	4,030	750	-	4,410
1982	750	1,840	500	-	3,030
1983	25	4,945	1,000	0	6,383

Table 15. Annual spawning escapements for sockeye, coho, pink, chum and chinook, Area 4, 1963-1983.

Year	Sockeye	Coho	Pink	Chum	Chinook
1963	604,479	56,730	1,032,100	4,475	31,905
1964	866,232	66,950	1,687,400	6,450	27,200
1965	644,710	119,375	1,281,535	9,530	26,165
1966	412,419	115,950	824,244	19,370	21,483
1967	628,538	53,566	593,307	15,075	26,125
1968	576,604	119,100	1,702,025	11,575	25,475
1969	671,504	75,150	852,400	11,234	29,500
1970	677,150	84,650	971,800	10,865	21,400
1971	825,400	78,745	1,173,206	5,257	20,000
1972	696,076	56,841	1,762,987	36,795	20,120
1973	827,133	39,020	1,259,500	24,351	40,295
1974	730,621	36,720	367,700	14,002	32,626
1975	831,659	22,215	1,868,340	10,375	21,359
1976	582,652	31,217	680,425	11,325	14,354
1977	952,080	39,715	977,172	11,800	31,130
1978	421,125	51,947	727,773	7,628	23,334
1979	1,168,286	22,370	509,125	4,455	19,047
1980	545,493	34,590	745,583	25,006	23,538
1981	1,424,509	26,466	1,187,865	9,360	23,970
1982	1,137,240	24,546	739,800	4,626	16,707
1983	892,000	19,055	2,542,005	1,563	16,541

could escape . Consequently, very short fisheries were scheduled until the first week of August. By this time many gillnets had already left the area and, although four-day fisheries were held over the next two weeks, the gillnets were not very effective in harvesting the available surplus.

The commercial fishery in Area 4 is managed towards weekly escapement targets for pink and sockeye as determined by the Skeena River test fishery at Tyee. This test fishery provides estimates of daily sockeye and pink escapements and indices of abundance for chum, chinook, coho and steelhead. These estimates are later compared with spawning ground counts (Table 16). In 1983, the test fishery underestimated the sockeye escapement by 23% and the pink escapement by 43% (Table 16). For sockeye, this brought an escapement that was thought to be well below optimum in-season to barely optimum levels while for pink salmon it meant an even larger overescapement than was thought during the season. In evaluating this situation it appears that some additional fishing time might have been provided for gillnets during the first week of August. In addition, a stronger case might have been advanced for a seine fishery in Area 4. However, this would have to be weighed against the incidental catches of sockeye.

As in the Nass River, chinook escapements to the Skeena continued their downward trend. However, unlike the Nass system where the quality of escapement estimates is mediocre, estimates for the Skeena, although quite varied among sub-systems, are fairly good for most of the major rivers. The Babine River, with the highest quality of escapement estimates, has had a counting fence on it since 1947, while the Kitsumkalum and Morice rivers are surveyed very intensively by air and dead-pitch programs. Continuation of these surveys should be a priority in future years as more restrictive chinook conservation measures are taken.

The Indian Food Fishery, especially in non-tidal waters, has been harvesting an increasing number of chinook salmon in recent years. Efforts should be made to include this fishery in the larger fishery management framework.

The chum escapement to the Skeena was extremely poor in 1983 but with the small stock size in relation to the target species it appears that very little can be done to rehabilitate this run by management action alone. There will be years when, because of a poor pink run, very little fishing pressure will be exerted terminally on the chum run. However, this type of non-specific management should be combined with some form of enhancement if the full benefits from this species are to be realized.

The status of coho stocks in the Skeena River is largely unknown because of poor viewing conditions during spawning surveys. There are no directed commercial fisheries on this species and as such, the management of this stock is effected largely by limiting the exploitation rate during targeted fisheries on pink and sockeye. As in Area 3, baseline management studies are required on this stock before a more active management program can be implemented.

Table 16. Comparison of Skeena River test fishery estimates and spawning ground counts for sockeye and pink salmon, 1969-1983.

Year	Test fishery		Spawning ground		% Error[a]	
	Sockeye	Pink	Sockeye	Pink	Sockeye	Pink
	(x 1000)		(x 1000)			
1969	681	917	704	873	3.27	-5.04
1970	641	912	722	923	11.22	1.19
1971	806	961	885	1,090	8.93	11.83
1972	739	650	742	1,672	0.40	61.12
1973	1,197	855	962	1,251	-24.43	31.65
1974	970	343	792	314	-22.47	-9.24
1975	902	879	910	1,822	0.88	51.76
1976	628	514	658	597	4.56	13.90
1977	962	934	1,041	962	7.59	2.91
1978	669	837	526	703	-27.19	-19.06
1979	1,061	517	1,294	510	18.01	-1.37
1980	917	627	704	765	-30.26	18.04
1981	1,064	883	1,565	1,132	32.01	22.00
1982	1,158	438	1,315	710	11.94	38.31
1983	803	1,421	1,040	2,500	22.79	43.16
				Mean error	15.06	22.04

[a]Error calculated by subtracting spawning ground count from test fishery count and expressing this as % of spawning ground count.

AREA 5

1983 PRE-SEASON STOCK EXPECTATIONS

The 1983 stock expectations and fishing plans for Area 5 are described in detail in Appendix 3. Local pink stocks were expected to be the only fishable stock with only a small potential surplus. Sockeye, coho and chum returns were expected to range from extremely poor to below average.

1983 PRE-SEASON FISHING PATTERN, AREA 5

Commercial net fishing was scheduled to begin on June 26 for gillnets. Grenville Channel, Union Pass and Ala Pass were expected to be closed to net fishing for the entire season. The seine fishery was to be delayed by one week due to low availability of local stocks in seine areas and to coincide with the openings in Areas 3 and 4. In-season sockeye abundance was to be monitored at two counting weirs on Devon and Bonilla lakes as part of the International Tagging Program. From July 3 to July 16 net openings in Area 5 would be determined by the abundance of local sockeye stocks. Fisheries conducted from July 17 to August 20 would be regulated in accordance with Skeena River sockeye and pink strength, while fishing during the week of August 21 would target on local pink stocks. Following August 28, openings would occur for the purpose of harvesting local pink stocks with several management units closed to protect local chum and coho stocks. Area 5 was expected to close to net fishing no later than September 4.

Trolling was scheduled to open in all of Area 5 on April 15 for seven days a week with regular stream boundaries in effect.

1983 WEEKLY FISHING SUMMARY, AREA 5

Table 17 summarizes weekly in-season fishery management and its rationale. Tables 18 and 19 present weekly gillnet and seine catches respectively in Area 5 by species and weekly number of gear. Figure 3 shows Area 5 management units (M.U.).

June 26 to July 3

Area 5 Indian Food Fisheries in the previous week were well below normal, indicating that local stocks may be weaker than expected. In addition, Area 4 Indian Food Fisheries and the Skeena test fishery showed no early strength to the Skeena sockeye run. Based on this information it was decided not to open the fishery.

July 3 to July 10

As a result of continued poor Indian Food Fishery catches and very poor sockeye escapements to the Devon and Bonilla lake weirs, no net openings were scheduled for this week. Areas 3 and 4 were also closed due to weak sockeye stocks.

July 10 to July 17

Local sockeye stocks continued to show weakness. However, in conformity with Areas 3 and 4 and due to an apparent abundance of chum and coho, based on International Tagging Program and Indian Food Fishery catches, Area 5 was

Table 17. Weekly net fishing season: pre-season plans, in-season management and rationale for management, Area 5, 1983.

Date	Pre-season fishing plans[a]	In-season management[a]	Rationale for in-season management
June 26-July 3	Open to gillnets 2 days.	No opening.	-weak local stocks indicated by Indian Food Fisheries in Areas 4 and 5, and Skeena test fishery -seine fishery delayed 1 week due to weak local stocks and to conform with seine openings is Areas 3 and 4
July 3-10	Open to nets 2 days.	No opening.	-continued weak local sockeye stocks indicated by poor catches by Indian Food Fishery and very poor sockeye escapements to Devon and Bonilla lake weirs
July 10-17	Open to nets 2 days.	Opened to nets 1 day.	-fishery opened to conform with Area 3 and 4 openings and due to apparent abundance of chum and coho -fishery restricted due to weak local sockeye stocks -fishery closed due to poor catches of all species and closures in Areas 3 and 4
July 17-24	Open to nets maximum 2 days.	Opened to nets 1 day; extended 1 day.	-good chum catch in previous week and increased coho abundance -fishery extended to conform with Area 4 fishery and since inclement weather restricted the 1 day fishery in Area 5 -fishery closed due to poor catches on day two
July 24-31	Open to nets maximum 2 days.	Opened to nets 1 day; extended 1 day.	-fishery opened to conform with Area 4 opening -fishery extended with anticipation that the strong Skeena pink run will migrate through Area 5 -fishery closed due to poorer than expected pink catches
July 31-Aug. 7	Open to nets maximum 2 days.	Opened to nets 1 day.	-expected increase in pink run strength and fair chum and coho abundance -fishery closed due to poor catches and to conform with Area 4 fishery closure

Table 17. (Cont'd).

Date	Pre-season fishing plans[a]	In-season management[a]	Rationale for in-season management
Aug.7-14	Open to nets maximum 2 days.	Opened to nets 2 days; extended 1 day.	-fishery opened in conjunction with Area 3 and 4 openings -fishery extended to conform with extensions in Areas 3 and 4 -fishery closed due to declining catches
Aug.14-21	Open to nets maximum 2 days.	Opened to nets 2 days; extended 1 day.	-individual M.U.'s were fished for 1 or 3 days depending on strength of stocks as indicated by catches (see text) -fishery extended due to good pink and chum catches -fishery closed due to declining catches
Aug. 21-28	Open to nets 2 days.	Opened to nets 2 days.	-harvesting of local stocks; pink stocks were just arriving -fishery closed due to low catches and escapements for all species -seasonal fishery terminated August 23 since no further fishable stocks were anticipated
Aug. 28	Open to nets 1 day.	Fishery terminated Aug. 23.	-

[a]For restrictions on management units see text and Appendix 3.

Table 18. Gillnet catch by species and number of gear, Area 5, 1983 (preliminary data)[a].

Date	No. gear	Sockeye	Coho	Pink	Chum	Chinook	Sthd.[b]	J.chin.[c]
July 10/11	35	1,194	547	841	5,113	22	0	0
Week total	-	1,194	547	841	5,113	22	0	0
July 17/18	28	1,076	61	221	1,115	4		
19	20	481	57	275	873	4	1	0
Week total	-	1,557	118	496	1,988	8	1	0
July 24/25	18	507	214	870	504	2	3	0
26	72	2,836	2,810	7,408	1,322	27	8	0
Week total	-	3,343	3,024	8,278	1,826	29	11	0
July 31/Aug.1	27	762	785	3,759	1,566	5	5	0
Week total	-	762	785	3,759	1,566	5	5	0
Aug. 7/8	45	377	278	1,430	1,092	2	0	0
9	13	226	191	1,303	579	0	0	0
10	21	315	231	2,625	525	0	6	2
Week total	-	918	700	5,358	2,196	2	6	2
Aug. 14/15	37	291	585	2,360	1,435	7	30	0
16	40	318	704	2,214	793	8	12	0
17	36	236	574	2,579	664	9	0	0
Week total	-	845	1,863	7,153	2,892	24	42	0
Aug. 21/22	59	314	816	3,530	908	24	10	0
23	50	250	600	3,500	650	7	10	0
Week total	-	564	1,416	7,030	1,558	31	20	0
Total for year	-	9,183	8,453	32,915	17,139	121	85	2

[a]Hailed catches subject to change when sales slip catches are processed.

[b]Steelhead.

[c]"Jack" chinook; chinook less than 2.3 kg (5 lb).

Table 19. Seine catch by species and number of gear, Area 5, 1983 (preliminary data)[a].

Date	No. gear	Sockeye	Coho	Pink	Chum	Chinook	Sthd.[b]	J.chin.[c]
July 10/11	7	153	350	453	497	18	0	0
Week total	-	153	350	453	497	18	0	0
July 17/18	2	625	0	575	0	0	0	0
19	1	270	50	1,440	10	10	5	15
Week total	-	895	50	2,015	10	10	5	15
July 24/25	0	0	0	0	0	0	0	0
26	2	600	300	4,800	120	20	0	180
Week total	-	600	300	4,800	120	20	0	180
July 31/Aug.1	3	425	455	10,450	220	28	0	50
Week total	-	425	455	10,450	220	28	0	50
Aug. 7/8	1	100	100	5,225	55	0	0	0
9	0	0	0	0	0	0	0	0
10	10	58	58	13,127	30	10	0	20
Week total	-	158	158	18,352	85	10	0	20
Aug. 14/15	6	236	300	7,611	168	22	10	50
16	1	28	70	2,608	55	3	0	0
17	4	360	720	10,800	120	8	5	25
Week total	-	624	1,090	21,019	343	33	15	75
Aug. 21/22	9	60	135	9,745	30	12	0	45
23	9	87	177	5,737	25	9	0	90
Week total	-	147	312	15,482	55	21	0	135
Total for year	-	3,002	2,715	72,571	1,330	140	20	475

[a]Hailed catches subject to change when sales slip catches are processed.

[b]Steelhead.

[c]"Jack" chinook; chinook less than 2.3 kg (5 lb).

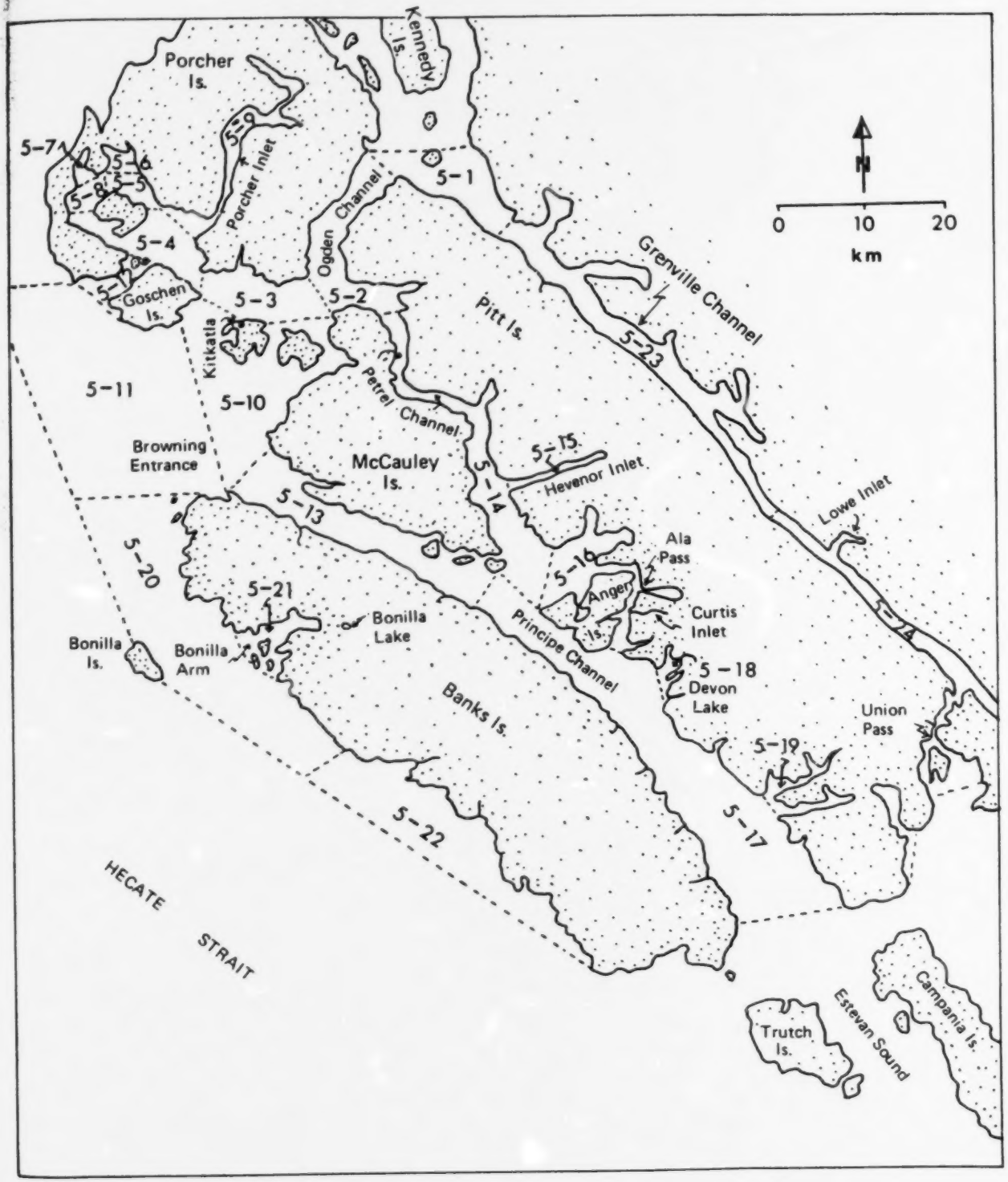

Fig. 3. Location of Area 5 management units, B.C.

opened to net fishing for one day. In addition to the management units detailed in the pre-season plan which included Ogden Channel and Browning Entrance, the top of Principe Channel (M.U. 5-13) was also opened.

At the time of the opening on July 10, 35 gillnets and 7 seines fished in Area 5. During the first 12 hours of the fishery the seine and gillnet chum catch averaged 78 and 40 fish per boat respectively. The catch of all other species was very poor with a sockeye average of 5 for seines and 8 for gillnets. As a result of the poor sockeye catch and the closing of Areas 3 and 4 it was decided to close Area 5 as scheduled on July 11.

July 17 to July 24

A one-day opening was scheduled for July 17 in the same management units as were open in the previous week. Although local sockeye stocks continued to look weak, the good chum catch in the previous week and an increase in the coho abundance were sufficient to warrant a moderate fishery.

The overnight catch of all species was poor. However, inclement weather conditions did not permit fishing in many of the outside areas. During this week, the Area 4 fishery was extended for 24 hours due to to an improved sockeye catch and for this reason Area 5 fishery was also extended. Catches during the extension remained poor and the fishery was terminated on July 19.

July 24 to July 31

The west coast of Banks Island (M.U.'s 5-20 and 5-22) and Principe Channel (M.U.'s 5-13 and 5-17) were closed to net fishing until further notice due to poor sockeye escapements to the Devon and Bonilla lake weirs. A one-day fishery was scheduled in conformity with Area 4.

A total of 18 gillnets were present at the opening on July 24. Despite the small fleet size, early catches were very poor for all species. With the early run strength shown by the Skeena pink run and the possibility of Area 5 being a migration route for these stocks, it was decided to extend the fishery for an additional 24 hours. This resulted in an increase in the fleet to 72 gillnets and 2 seines. The pink catch during the extension was poorer than expected with the 2 seines averaging 200 to 400 fish per set and the gillnets averaging less than 50 fish per boat for the first 12 hours. Based on the poor catch, the fishery was terminated on July 26. The Skeena pink run did not appear to be using Area 5 as a major migration route.

July 31 to August 7

A one-day fishery was scheduled for this week with the same management units open as in the previous week. This was based on fair chum and coho abundance and an expected increase in pink run strength.

The fishery began on July 31 with a fleet of 27 gillnets and 3 seines. After 12 hours, poor catches were reported for all species except chum. The poor catch and the closure of the Area 4 fishery after 24 hours resulted in the Area 5 fishery also being terminated on schedule.

August 7 to August 14

In conjunction with Areas 3 and 4, a two-day fishery was planned for Area 5 commencing on August 7. The catch from the last half-day of last week's fishery seemed to indicate an improvement in the abundance of chum, coho and pink.

The catch was poor during the first 36 hours of the fishery. However, it was decided to extend the fishery for 24 hours to conform with extensions in Areas 3 and 4. In the first 12 hours of the extension, catches declined further and the fishery was terminated on August 10.

August 14 to August 21

A two-day fishery was scheduled in the same management units that were open the previous week. In addition, Petrel Channel, the top of Principe Channel and the north-west side of Banks Island (M.U.'s 5-13, 5-14 and 5-20 respectively) were opened for one day to assess the strength of local pink stocks within these areas. In the previous week, escapement surveys of some local streams had indicated a possible fishable surplus in these areas.

The fishery began on August 14 with a fleet of 37 gillnets and 6 seines. In the first day, pink catches in M.U.'s 5-13 and 5-20 were good while M.U. 5-14 catches were poor. As a result, fisheries in M.U.'s 5-13 and 5-20 were extended by 24 hours while M.U.5-14 was closed as scheduled. After 36 hours, pink and chum catches in all open management units remained good; hence an additional 24-hour extension was granted. Catches declined during the extension and the fishery was terminated on August 17.

August 21 to August 28

A two-day fishery was planned for M.U.'s 5-1, 5-2, 5-3, 5-4, 5-5, 5-10, 5-11, 5-12, 5-13, 5-14, 5-17, 5-20 and Porcher Inlet. During this week Area 5 was to be managed strictly for local stocks. At this time pink stocks were just arriving while coho stocks appeared as weak as expected.

After 36 hours of fishing, catches of all species were low and escapements of local stocks were poor. The fishery was terminated on schedule on August 23. No further openings were scheduled for Area 5 as no other fishable surpluses were expected.

Table 20 shows the annual commercial net catches of salmon in Area 5 by gear for the period 1963 to 1983. Compared to the preceeding five-year catch averages, the 1983 net catches were lower for all salmon species. In particular, the sockeye catch of 12,185 was the lowest on record. Seines captured 54% of the total 1983 net catch.

OTHER FISHERIES, AREA 5

Indian Food Fishery

The native food fishery in Area 5 is conducted exclusively by the Kitkatla Band (Fig. 3), targeting principally on local sockeye stocks. Catches for this fishery are presented in Table 21.

Sport fishery

A very minor sport fishery occurs in Area 5. Catch estimates are presented in Table 22.

Table 20. Annual commercial salmon net catches by species and gear, Area 5, 1963-1983.

Year	Sockeye			Coho			Pink		
	Gillnet	Seine	Total	Gillnet	Seine	Total	Gillnet	Seine	Total
1963	82,962	17,240	100,202	122,680	16,967	139,647	383,080	359,201	742,281
1964	115,495	31,679	147,174	96,440	38,714	135,154	588,808	1,033,566	1,622,374
1965	119,328	14,528	133,856	73,632	25,185	98,817	192,217	180,313	372,530
1966	85,533	37,661	123,194	88,684	54,595	143,279	1,004,523	1,630,329	2,634,852
1967	46,886	11,678	58,564	6,743	3,357	10,100	13,010	31,452	44,462
1968	59,344	13,673	73,017	53,474	30,201	83,675	186,938	1,131,211	1,318,149
1969	43,147	3,227	46,374	23,041	3,254	26,295	54,880	93,684	148,564
1970	111,959	17,687	129,646	50,735	14,623	65,358	634,898	785,027	1,419,925
1971	46,960	12,560	59,520	11,392	8,363	19,755	42,356	201,843	244,199
1972	63,307	12,578	75,885	33,294	11,384	44,678	92,303	1,100,585	1,192,888
1973	20,949	9,466	30,415	11,067	2,227	13,294	23,573	121,751	145,324
1974	11,596	2,121	13,717	24,263	2,124	26,387	46,696	98,296	144,992
1975	9,703	19,422	29,125	13,368	5,741	19,109	37,086	312,474	349,560
1976	18,589	487	19,076	18,351	3,752	22,103	228,363	297,249	525,612
1977	21,568	7,153	28,721	20,467	4,965	25,432	171,008	162,690	333,698
1978	31,066	3,480	34,546	25,458	3,157	28,615	107,231	226,022	333,253
1979	19,673	4,974	24,647	12,842	1,314	14,156	24,896	81,307	106,203
1980	23,703	3,025	26,728	12,997	4,289	17,286	101,142	369,507	470,649
1981	25,171	3,884	29,055	5,809	536	6,345	26,377	12,933	39,310
1982	31,918	28,510	70,428	7,927	2,054	9,981	18,940	39,676	58,616
1983[b]	9,183	3,002	12,185	8,453	2,715	11,168	32,915	72,571	105,486
Mean 1963-67	90,041	22,557	112,598	77,636	27,764	105,399	436,328	646,972	1,083,300
Mean 1968-72	64,943	11,945	76,888	34,387	13,565	47,952	202,275	662,470	864,745
Mean 1973-77	16,481	7,730	24,211	17,503	3,762	21,265	101,345	198,492	299,837
Mean 1978-82	26,306	10,775	37,081	13,007	2,270	15,277	55,717	145,889	201,606

Year	Chum			Chinook[a]			Steelhead		
	Gillnet	Seine	Total	Gillnet	Seine	Total	Gillnet	Seine	Total
1963	51,145	10,821	61,966	14,420	1,409	15,829	568	43	611
1964	70,991	42,052	113,043	6,064	2,314	8,378	450	69	519
1965	44,158	9,124	53,282	8,859	3,113	11,972	753	73	826
1966	78,700	60,631	139,331	6,489	3,526	10,015	936	68	1,004
1967	17,772	7,058	24,830	1,669	1,431	3,100	218	38	256
1968	75,714	58,100	133,814	4,149	3,669	7,818	386	50	436
1969	21,526	1,213	22,739	1,185	528	1,713	134	17	151
1970	62,198	17,085	79,283	4,194	2,746	6,940	624	87	711
1971	26,687	5,388	32,075	1,380	3,122	4,502	273	86	359
1972	87,614	26,607	114,221	2,743	2,525	5,268	414	71	485
1973	18,840	6,490	25,330	2,784	1,251	4,035	92	23	115
1974	13,464	3,523	16,987	531	323	854	92	8	100
1975	8,391	3,582	11,973	353	1,545	1,898	73	115	188
1976	12,550	885	13,435	592	119	711	121	6	127
1977	26,474	5,893	32,367	591	497	1,088	238	26	264
1978	33,713	6,218	39,931	942	1,583	2,525	316	30	346
1979	13,003	2,215	15,218	503	540	1,043	116	23	139
1980	33,131	6,749	39,880	433	730	1,163	298	39	337
1981	7,909	1,107	9,016	312	423	735	130	29	159
1982	9,037	2,890	11,927	382	1,183	1,565	39	226	265
1983[b]	17,139	1,330	18,469	123	615	738	85	20	105
Mean 1963-67	52,553	25,937	78,490	7,500	2,359	9,859	585	58	643
Mean 1968-72	54,748	21,679	76,426	2,730	2,518	5,248	366	62	428
Mean 1973-77	15,944	4,075	20,018	970	747	1,717	123	36	159
Mean 1978-82	19,359	3,836	23,194	514	892	1,406	180	69	249

[a]Chinook catch includes jack chinook (< 2.3 kg).

[b]Preliminary data.

Table 21. Indian Food Fishery catch, Area 5, 1964-1983.

Year	Sockeye	Coho	Pink	Chum	Chinook
1964	2,227	1,087	745	288	2
1965	1,300	1,800	800	100	100
1966	3,600	1,800	900	175	-
1967	2,950	950	400	300	-
1968	2,800	1,100	1,000	325	-
1969	1,800	305	155	110	25
1970	2,100	16	100	-	240
1971	2,500	180	90	210	32
1972	2,350	225	300	1,000	45
1973	1,741	92	134	216	20
1974	1,672	165	100	165	25
1975	1,750	200	1,300	100	20
1976	1,000	50	500	50	10
1977	2,990	0	0	0	0
1978	2,500	100	50	30	10
1979	2,800	0	0	0	0
1980	4,000	200	0	50	0
1981	2,000	300	600	200	0
1982	3,500	100	200	200	-
1983	3,000	200	200	100	50

Table 22. Sport fishery catch, Area 5, 1968-1983.

Year	Sockeye	Coho	Pink	Chum	Chinook
1968	-	-	-	-	-
1969	-	20	5	-	32
1970	-	14	11	-	34
1971	-	23	1	-	52
1972	-	47	11	-	93
1973	-	37	-	-	56
1974	-	-	-	-	-
1975	-	130	25	-	80
1976	-	62	-	-	185
1977	-	75	50	-	226
1978	-	97	65	-	213
1979	-	95	65	10	230
1980	-	115	40	5	235
1981	-	170	110	10	260
1982	-	200	50	-	400
1983	-	225	50	-	200

ESCAPEMENTS, AREA 5

The annual escapements in Area 5 by species for the period 1963 to 1983 are presented in Table 23. Escapements in 1983 generally declined from previous levels. The sockeye escapement of 12,450 was the lowest on record, and the returns were very disappointing given the reduced fishing times and the anticipated higher returns from brood years which had been fertilized. The pink escapement of 81,250 was slightly greater than 50% of the optimum level; however, good pink escapements were recorded in some Porcher Inlet streams. The chum escapement of 4,571 continued to decline as did that of coho (4,325 fish) although assessment of this species is difficult.

REVIEW, AREA 5

Although the pre-season stock expectations for Area 5 were not encouraging, the moderately optimistic forecasts for Grenville-Principe sockeye and pink stocks were anticipated to provide some fisheries. However, both these species experienced very poor returns, and specific and general area closures were required for their conservation.

Fisheries in Area 5 were generally scheduled to coincide with those in Area 4 in locations that are considered to be migration routes for Skeena stocks. Commercial fisheries were held periodically to assess stocks in management units where local stocks might be predominant such as the top of Principe Channel, Petrel Channel, Porcher Inlet, and the north-west shore of Banks Island. The catches in these fisheries were compared with historic data.

In-season stock assessment indicators included the Area 5 Indian Food Fishery, the Bonilla and Devon lake counting fences, hailed catch figures and stream surveys. Decision making for Ogden Channel and Browning Entrance fisheries was facilitated by the quality of information on the Skeena while a more subjective analysis was used in local stock areas.

Escapement goals were not achieved for all Area 5 salmon stocks. Local areas were closed for most of the season because of poor chum and sockeye expectations; however, the Browning Entrance - Ogden Channel corridor was open regularly to harvest passing Skeena sockeye and pink stocks. The incidental capture of local stocks during these fisheries undoubtedly reduced the escapement; however, stream survey information, the most reliable indicator for Area 5 stock abundance, was available too late for in-season management in most cases.

Area 5 sockeye stocks were in particularly poor condition in 1983, and early fence count and Indian Food Fishery data were used effectively in keeping the sanctuary areas closed.

Table 23. Annual spawning escapements for sockeye, coho, pink and chum, Area 5, 1963-1983.

Year	Sockeye	Coho	Pink	Chum
1963	97,950	47,850	170,675	19,500
1964	59,675	62,325	207,925	18,025
1965	57,500	64,750	112,900	18,700
1966	104,450	72,750	284,050	16,025
1967	36,050	26,875	20,900	10,275
1968	59,000	52,540	257,450	9,500
1969	24,400	14,275	24,125	2,650
1970	25,825	10,600	122,525	8,775
1971	55,225	9,775	77,511	16,125
1972	24,425	21,070	260,150	15,875
1973	32,850	17,250	58,875	17,750
1974	43,325	19,350	328,775	33,900
1975	50,000	23,350	170,525	10,050
1976	19,050	16,860	336,200	19,325
1977	11,400	25,410	110,275	32,170
1978	28,650	18,650	264,800	13,775
1979	16,000	17,275	44,000	13,950
1980	16,800	11,525	225,825	9,350
1981	16,000	18,025	121,850	3,650
1982	19,450	2,620	70,300	7,370
1983	12,450	4,325	81,250	4,571

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Appendix 1. Salmon expectations and fishing plans, Area 3, 1983.

Species	Cycle year catch		Cycle year escapement		1983 Escapement Expected	1983 Escapement Optimum	Expectations
Sockeye	(1978)	221,400		144,600	220,000	220,000	Near average return expected.
	(1979)	33,800		212,900			
	10 year average	215,200	10 year average	204,800			
Coho	(1980)	74,900		22,500	30,000	45,000	Near average return expected.
	10 year average	67,000	10 year average	24,400			
Pink	(1981)	635,300		204,400	200,000	200,000	Above average return expected.
	5 cycle average	636,000	5 cycle average	134,200			
Chum	(1979)	63,600		40,300	75,000	90,000	Below average return expected based on escapement. Expect very restricted fishing times in upper inlets.
	10 year average	171,100	10 year average	59,500			
Chinook	(1978)	35,000		10,200	20,000	30,000	Stock well below historic levels. Stringent conservation measures required.
	(1979)	22,100		7,000			
	10 year average	25,200	10 year average	9,750			

PROPOSED FISHING PATTERN

NOTE:

1. Fishing patterns for sub-areas 3-1 to 3-4 for pink and Portland Canal chum will be subject to limitations under the Canada/USA salmon agreement; negotiations are continuing.
2. Maximum mesh size for gillnets will be 136 mm at least until July 31.
3. Seine fishery delayed by one week for conservation of chinook.
4. Seine minimum bunt size is 70 mm from July 3 onward for the efficient harvest of local sockeye and pink stocks.
5. Openings in Observatory Inlet are dependent on chum run strength which is expected to be low.
6. Work Channel, Khutzeymateen Inlet, Steamer Passage and the Head of Nasoga Gulf remain closed to net fishing and trolling after May 1 for the remainder of the season.

EFFECTIVE DATE	ACTION
April 15	All of Area 3 open to trolling 7 days per week.
May 1	Area 3, inside Whitly Point closed to trolling for conservation of local chinook stocks. Sub-area 3-1 (outside Whitly Point) open to trolling 7 days per week.
June 26	Trolling inside Whitly Point restricted to net fishing times. Sub-areas 3-3, 3-7 and 3-12 open to gillnets 2 days per week.
July 3	Sub-areas 3-1, 3-2, 3-3, 3-4 and 3-7 open to net fishing 2 days per week with sub-area 3-12 open to gillnets only.

Appendix 2. Salmon expectations and fishing plans, Area 4, 1983.

Species	Cycle year catch		Cycle year escapement		1983 Escapement Expected	1983 Escapement Optimum	Expectations
Sockeye	(1978)	406,000		421,100	1,000,000	1,000,000	An above average return is expected and a catch in the order of 1 million is anticipated.
	(1979)	1,227,000		1,168,300			
	10 year average	962,000	10 year average	872,000			
Coho	(1980)	33,300		34,600	45,000	100,000	A weak return is expected.
	10 year average	67,000	10 year average	44,700			
Pink	(1981)	899,000		1,187,900	1,000,000	1,000,000	An above average return is expected and a catch in in the order of 1.3 million is anticipated.
	5 cycle average	813,000	5 cycle average	1,140,000			
Chum	(1979)	55,000		4,500	12,000	50,000	A below average return is expected.
	10 year average	60,300	10 year average	14,000			
Chinook	(1978)	14,000		23,300	30,000	50,000	A poor return is expected.
	(1979)	30,700		19,000			
	10 year average	29,000	10 year average	23,900			

PROPOSED FISHING PATTERN

NOTE: The proposed fishing plan is based on the best estimates of expected sockeye and pink returns and will be adjusted for all gear if the actual runs are different.

EFFECTIVE DATE	ACTION
April 15	Open to trolling in sub-areas 4-1, 4-2, 4-3, 4-5 and 4-8 only.
July 3 - Mid-August	Open to gillnets - maximum mesh size 136 mm. Open to trolling in 4-9 and 4-12 during net times only.
July 3	Anticipated 1-day gillnet opening. Open to trolling in sub-area 4-4,7 days per week.
July 10	Anticipated 3-day gillnet opening.
July 17	Anticipated 4-day net opening, seines permitted in 4-1, 4-2, 4-3, 4-4, 4-5, 4-8 and 4-9 this week only.
July 24	Anticipated 3-day gillnet opening.
July 31	Anticipated 3-day gillnet opening.
August 7	Anticipated 4-day gillnet opening.
August 14	Anticipated 2-day gillnet opening.
August 21 - UFN[a]	Closed for conservation of Skeena coho and coastal pink stocks.

[a]Until further notice.

Appendix 3. Salmon expectations and fishing plans, Area 5, 1983.

Species	Cycle year catch		Cycle year escapement		1983 Escapement Expected	1983 Escapement Optimum	Expectations
Sockeye	(1978)	34,700		28,700	30,000	75,000	With an average age 5 return and a weak age 4, only a moderate return is expected. Adverse weather conditions in 1978 may have affected the age 5 return. 5-year old Lowe Inlet fish from first year fertilization will be returning as well as 4-year old fertilized stocks from Lowe Inlet, Devon Lake, Bonilla Arm and Curtis Inlet.
	(1979)	24,600		16,000			
	10 year average	25,100	10 year average	25,900			
Coho	(1980)	17,300(net)		11,500	15,000	35,000	A very weak return expected.
	10 year average	21,700	5 year average	18,000	(1972-76[23,000])		
Pink	(1981)	17,800		121,900	150,000	150,000	With above average escapement and good incubation conditions in the brood year, a slightly above average return could be realized.
	4 cycle average	61,300	4 cycle average	111,000			
Chum	(1979)	15,000		14,000	20,000	35,000	Below average return expected.
	10 year average	21,500	10 year average	18,700			

PROPOSED FISHING PATTERN

NOTE: Seine fishery delayed by one week due to low availability of local stocks in seine areas, and to coincide with openings in Areas 3 and 4.

EFFECTIVE DATE	ACTION
All season	Grenville Channel, Union Pass and Ala Pass closed to net fishing.
April 15	Area 5 open to trolling 7 days per week with regular stream boundaries in effect.
June 26	Open to gillnets only 2 days in sub-areas 5-10, 5-11, 5-12 and 5-20. No mesh restriction.
July 3 - July 16	Sub-areas 5-1, 5-2, 5-3, 5-10, 5-11, 5-12 and 5-20 open to net fishing 2 days per week. No gillnet mesh restriction.
July 17 - August 20	Sub-areas 5-1, 5-2, 5-3, 5-10, 5-11, 5-12, 5-13 and 5-20; net fishing openings regulated in accordance with Skeena River sockeye and pink strength (maximum 2 days per week).
August 21	Sub-areas 5-1, 5-2, 5-3, 5-4, 5-10, 5-11, 5-12, 5-13, 5-14, 5-17 and 5-20 open to net fishing for 2 days to harvest local pink stocks.
August 28	Sub-areas 5-13, 5-14, 5-17 and 5-20 closed to protect local chum and coho stocks. Sub-areas 5-1, 5-2, 5-3, 5-4, 5-10, 5-11 and 5-12 open to net fishing for 1 day to harvest local pink stocks.
September 4	Area 5 closed to net fishing.